AP&L

White Bluff Steam Electric Station
Plant Performance Group

December 2, 1992

Inter-Office Correspondence

TO: Mr. Mickey Cox

FROM: Dennis A. Wall

SUBJECT: 1992 Heat Rate Tests - Coal Units

Attached are the results of the Heat Rate Tests conducted this year at the White Bluff and Independence Steam Electric Stations. All four units' results are presented in graphical form so that they may be easily reviewed and compared. For your convenience, 1991's results are also included.

ISES-1, ISES-2, and WB-2 were tested during the normal summer test period. WB-1 was not tested until November due to recurring problems this summer with the 2A feedwater heater. It is primarily for this reason that all four units' results were not compiled into one report until this time.

If you need any additional information, or if you have any comments, please do not hesitate to contact me. My telephone extension is 7021.

DAW/dw
Attachments

Dennis A. Wall

cc: Mr. Max Halbert
Dr. Dale Swindle
Mr. Ron House
Mr. Roger Lawson

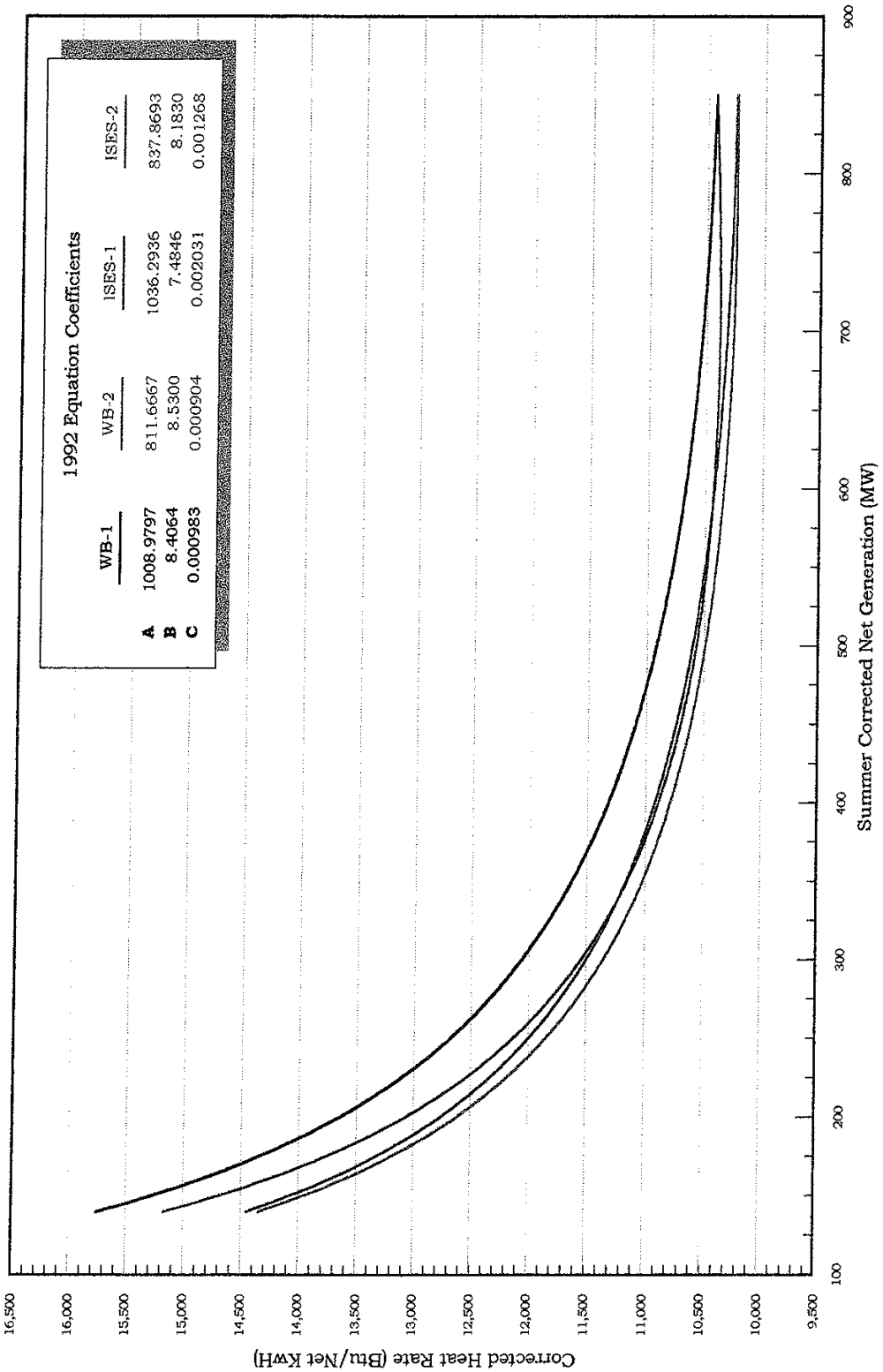
An Entergy Company

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Coal Units 1992 Heat Rate Test Information

(corrected to summer conditions)

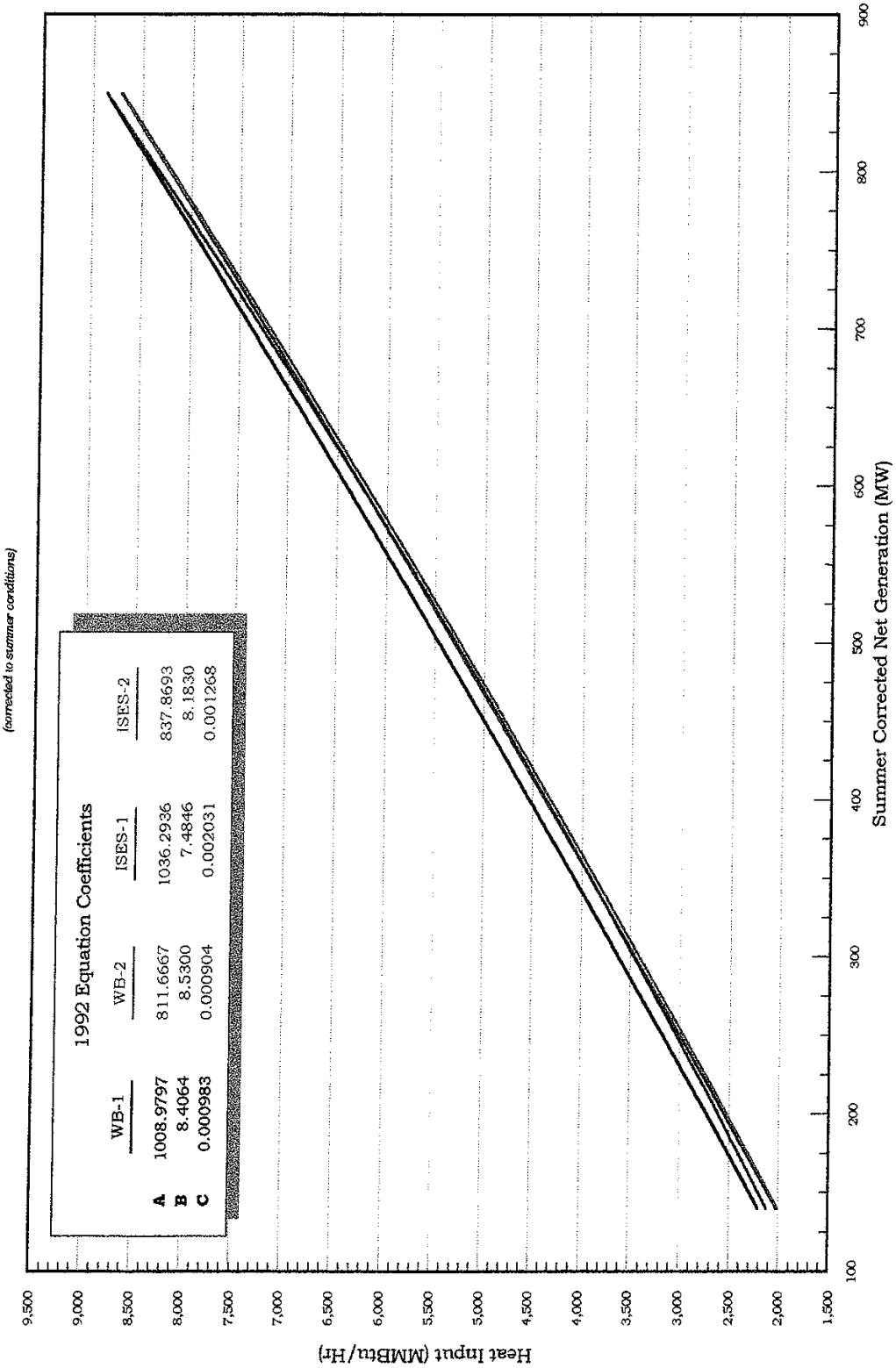


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

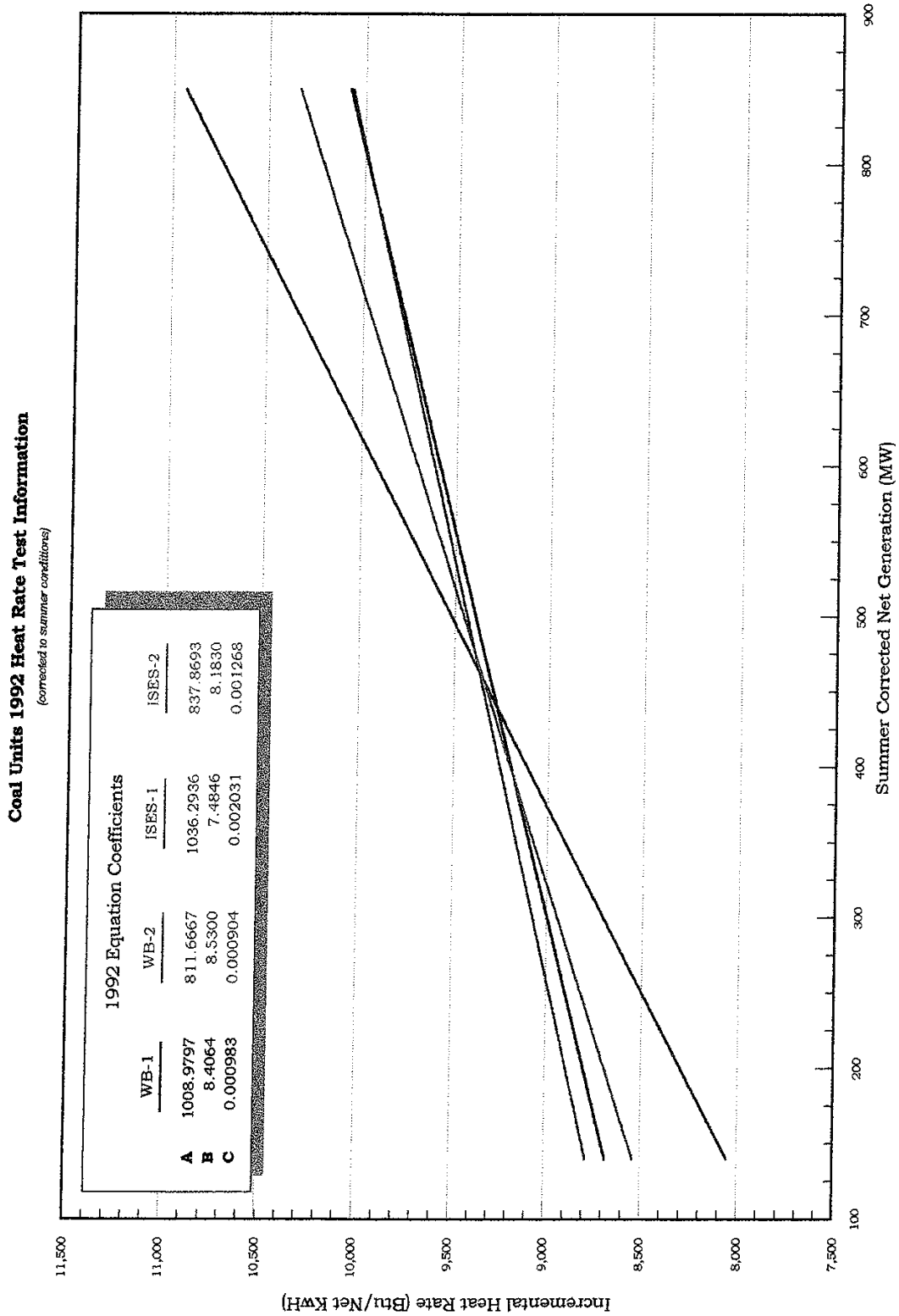
Coal Units 1992 Heat Rate Test Information

(corrected to summer conditions)



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

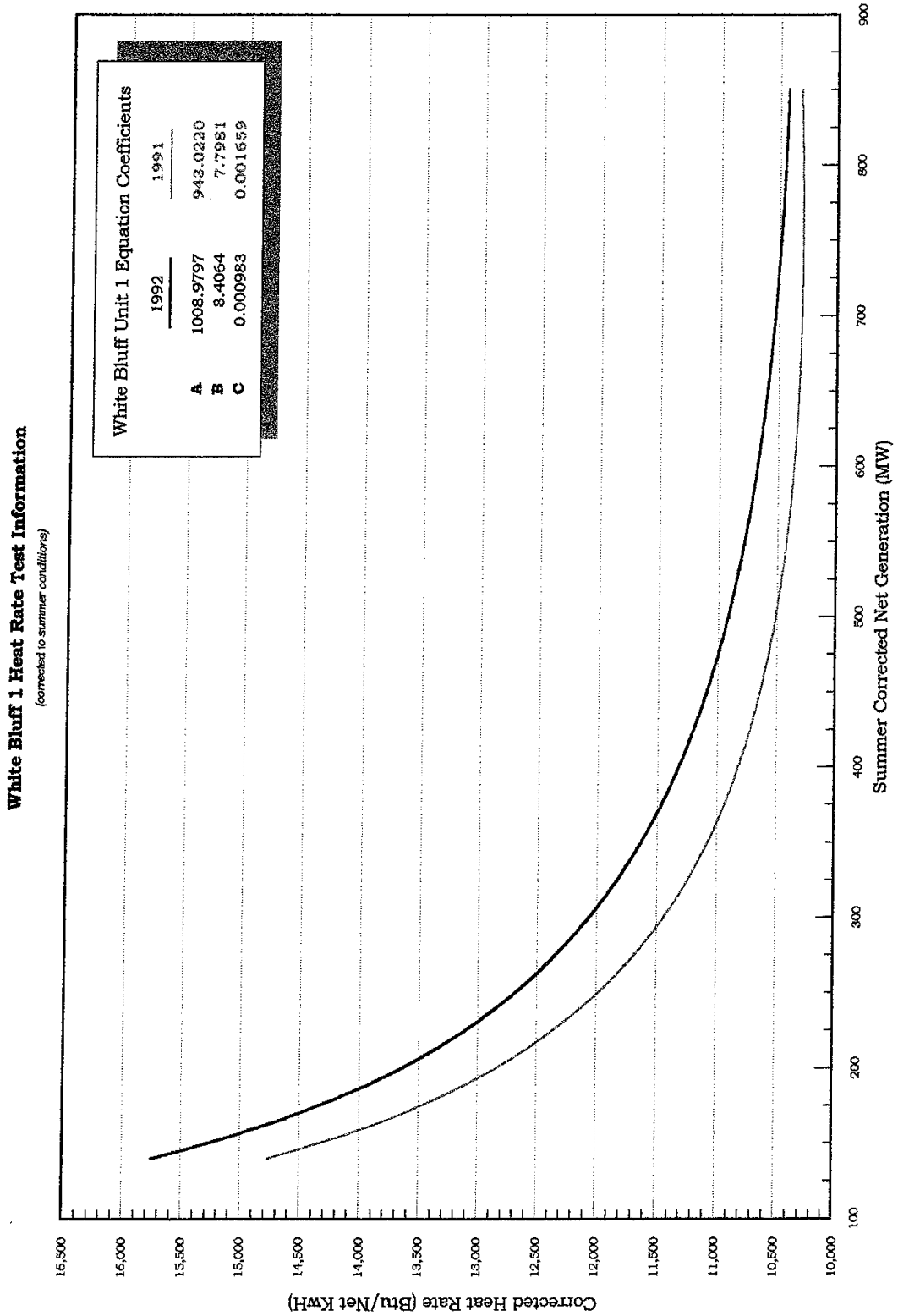
Confidential Business Information



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

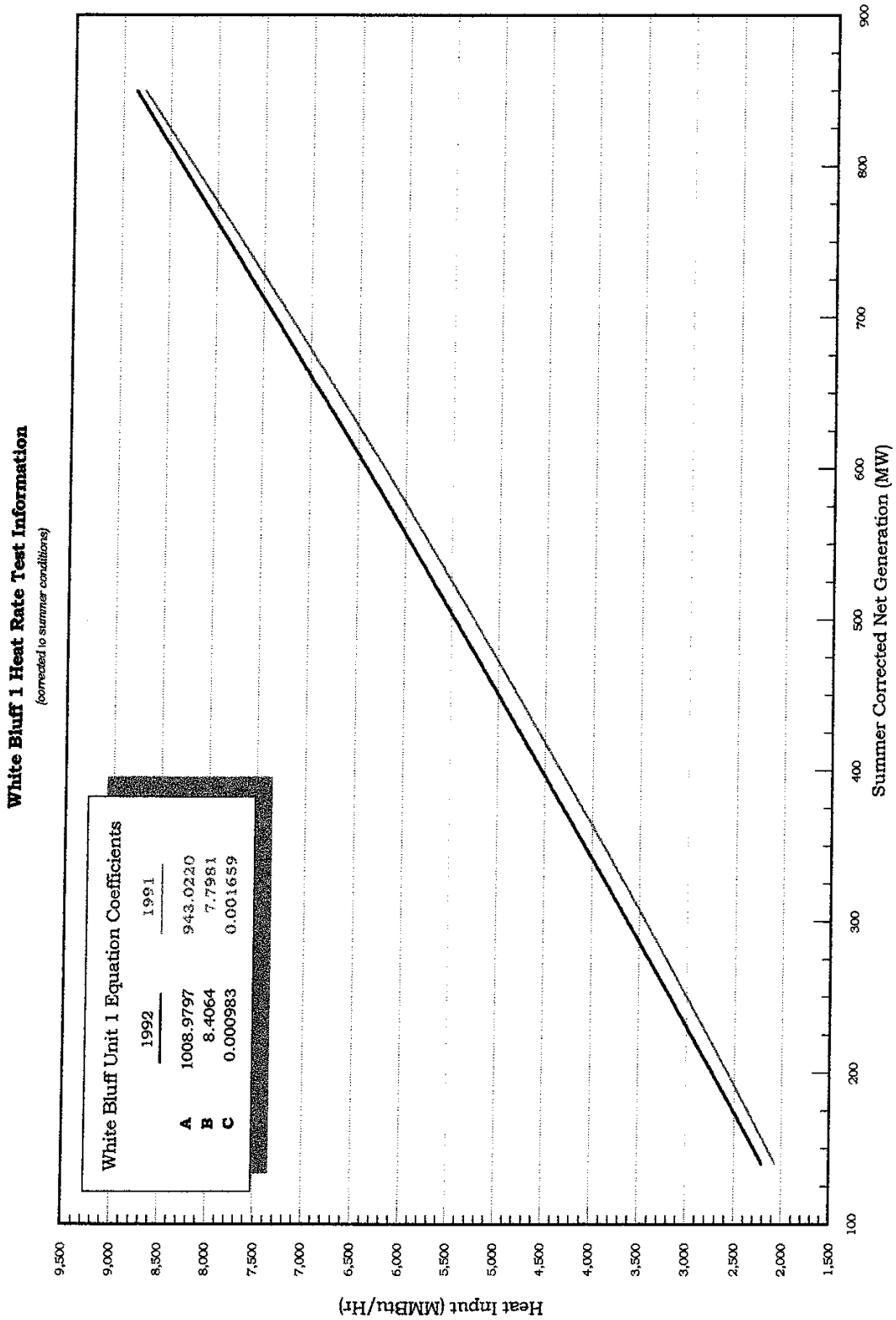
Confidential Business Information

ISES_00005478



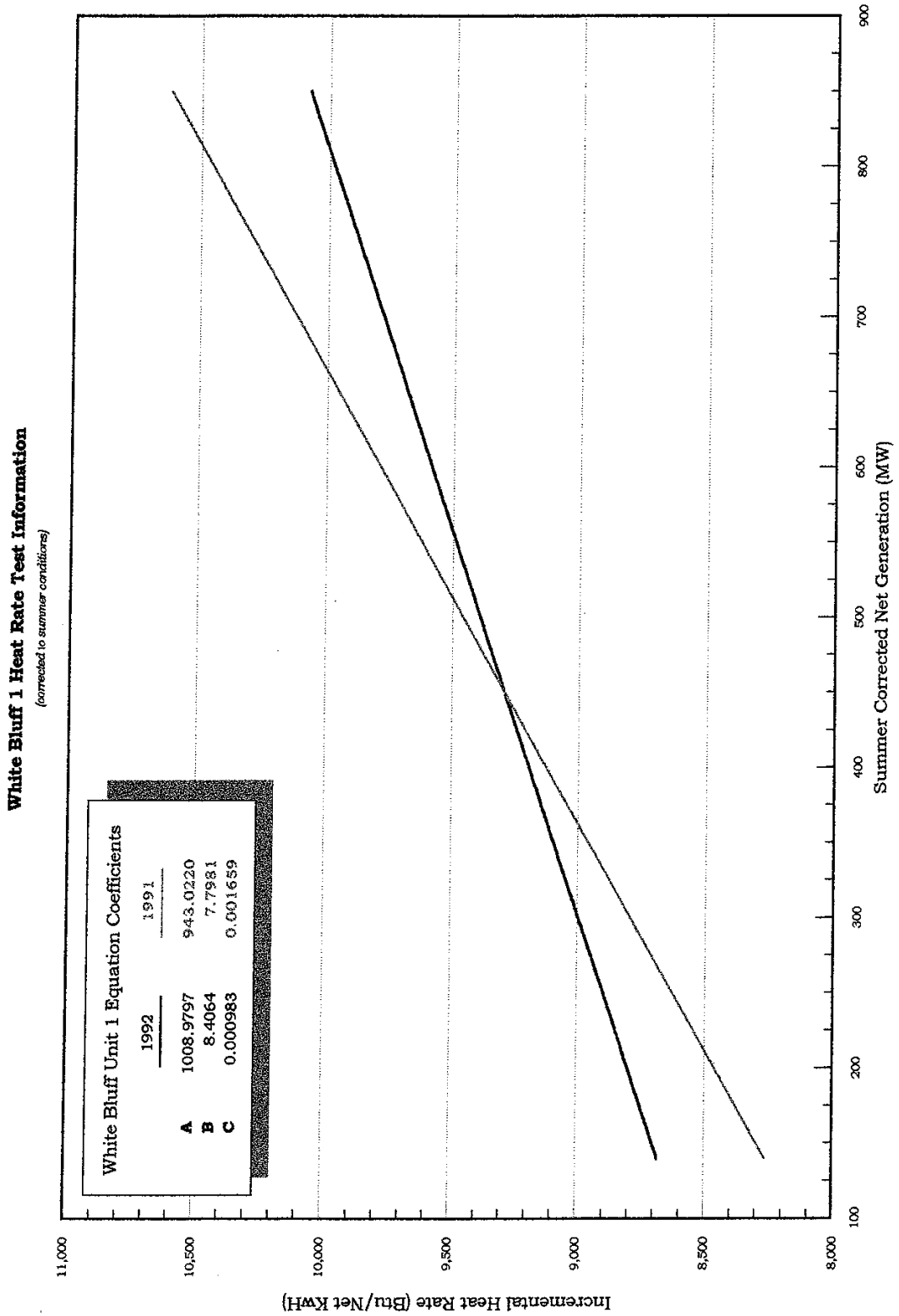
Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information



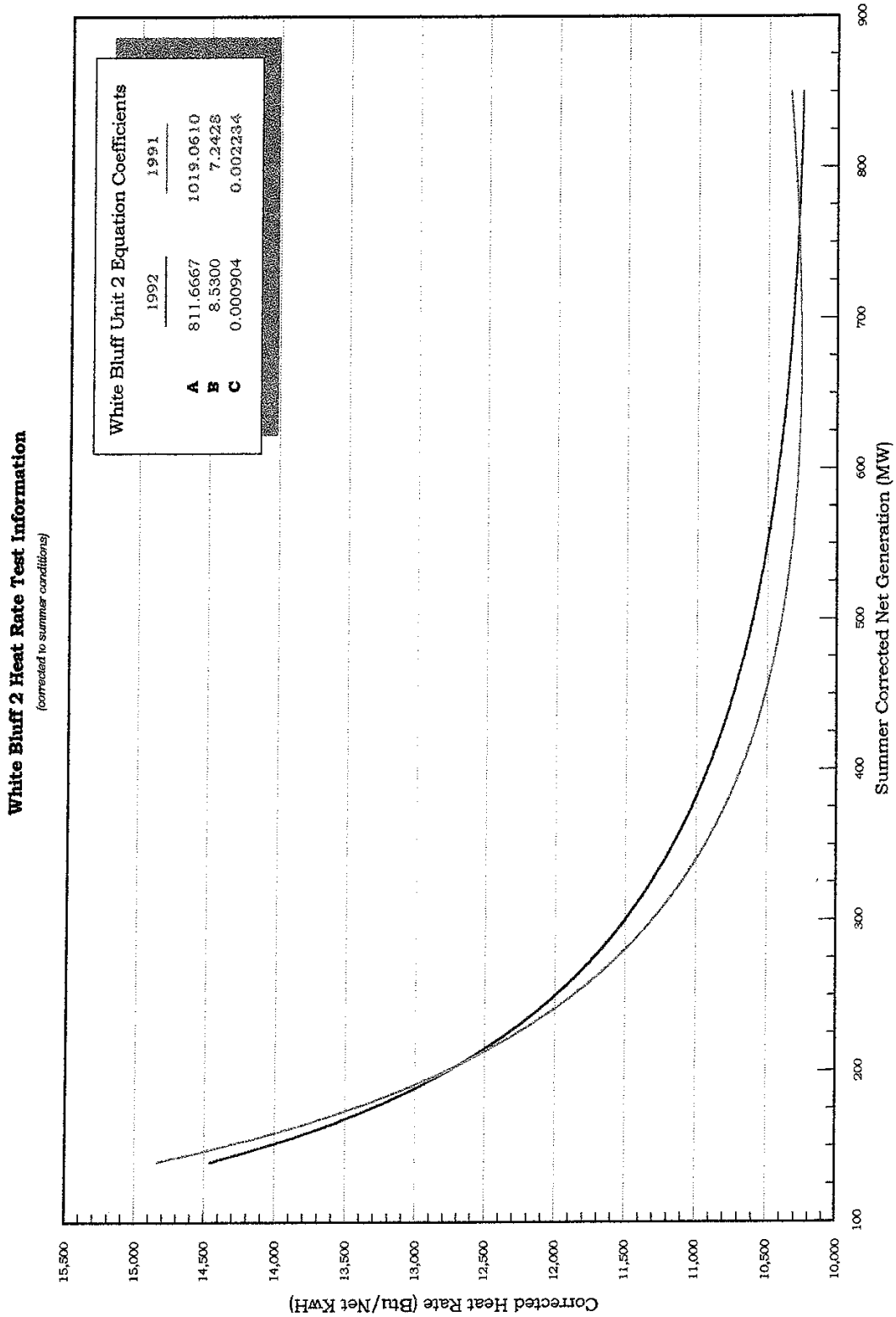
Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

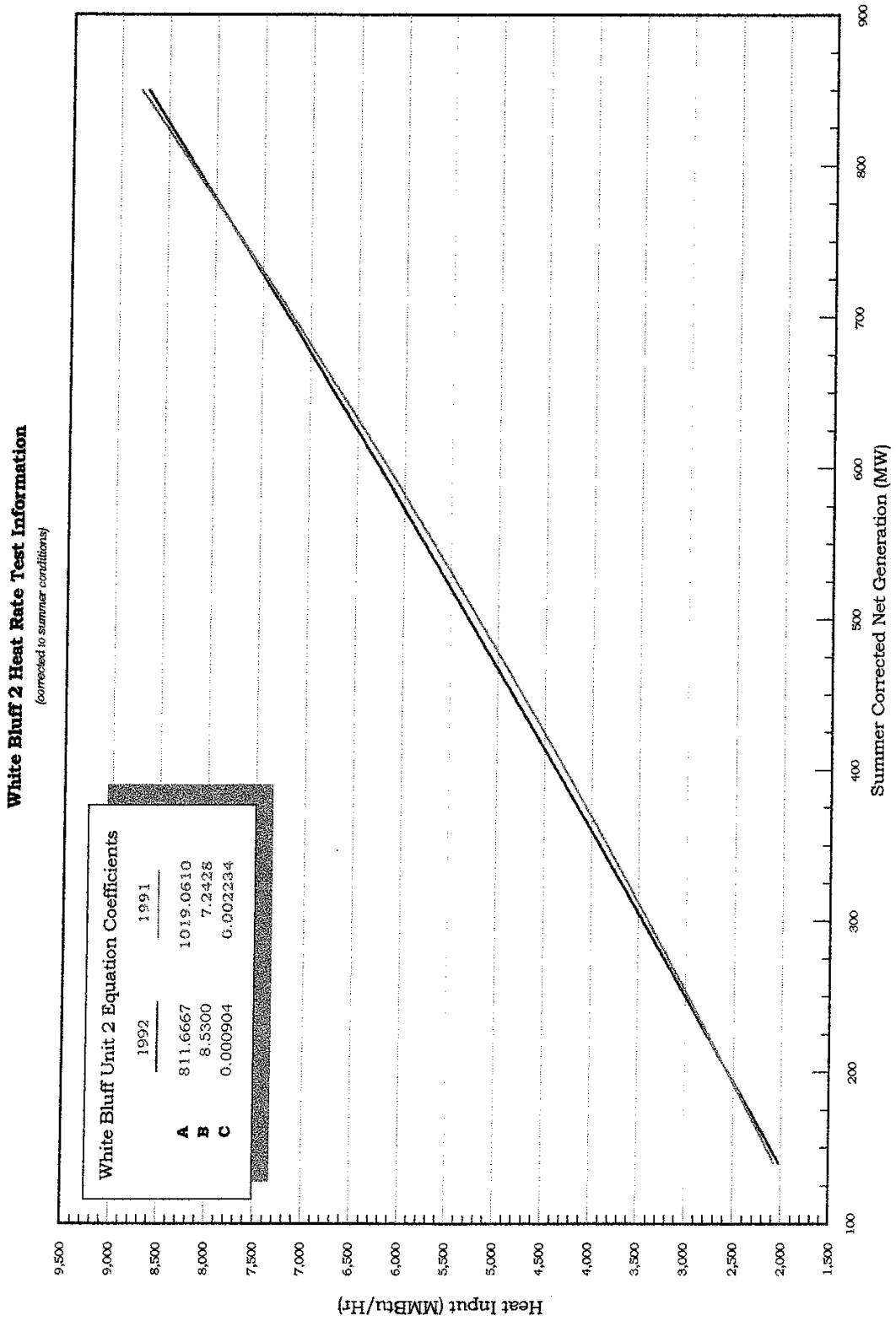
Confidential Business Information



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

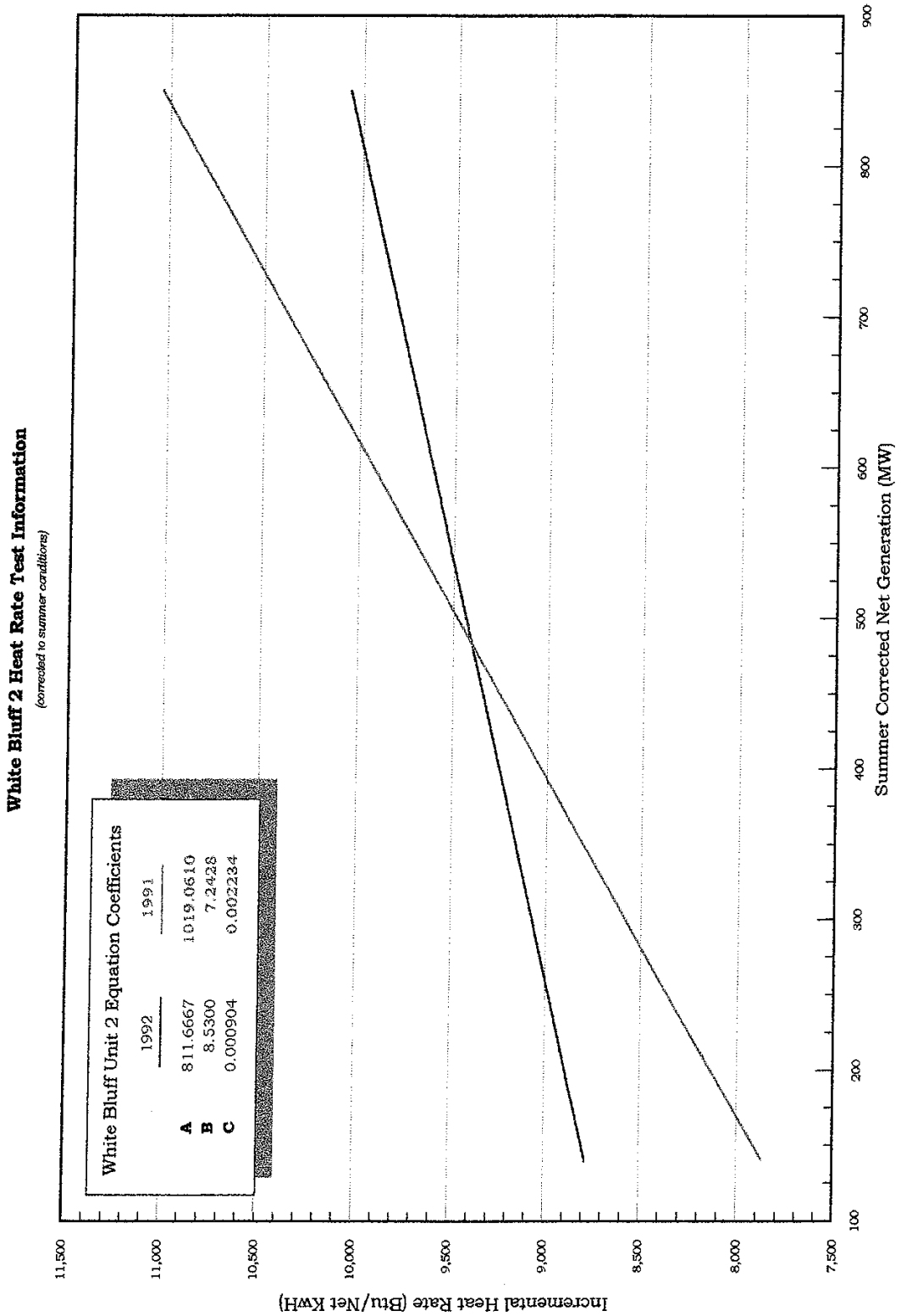
Confidential Business Information

ISES_00005482



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

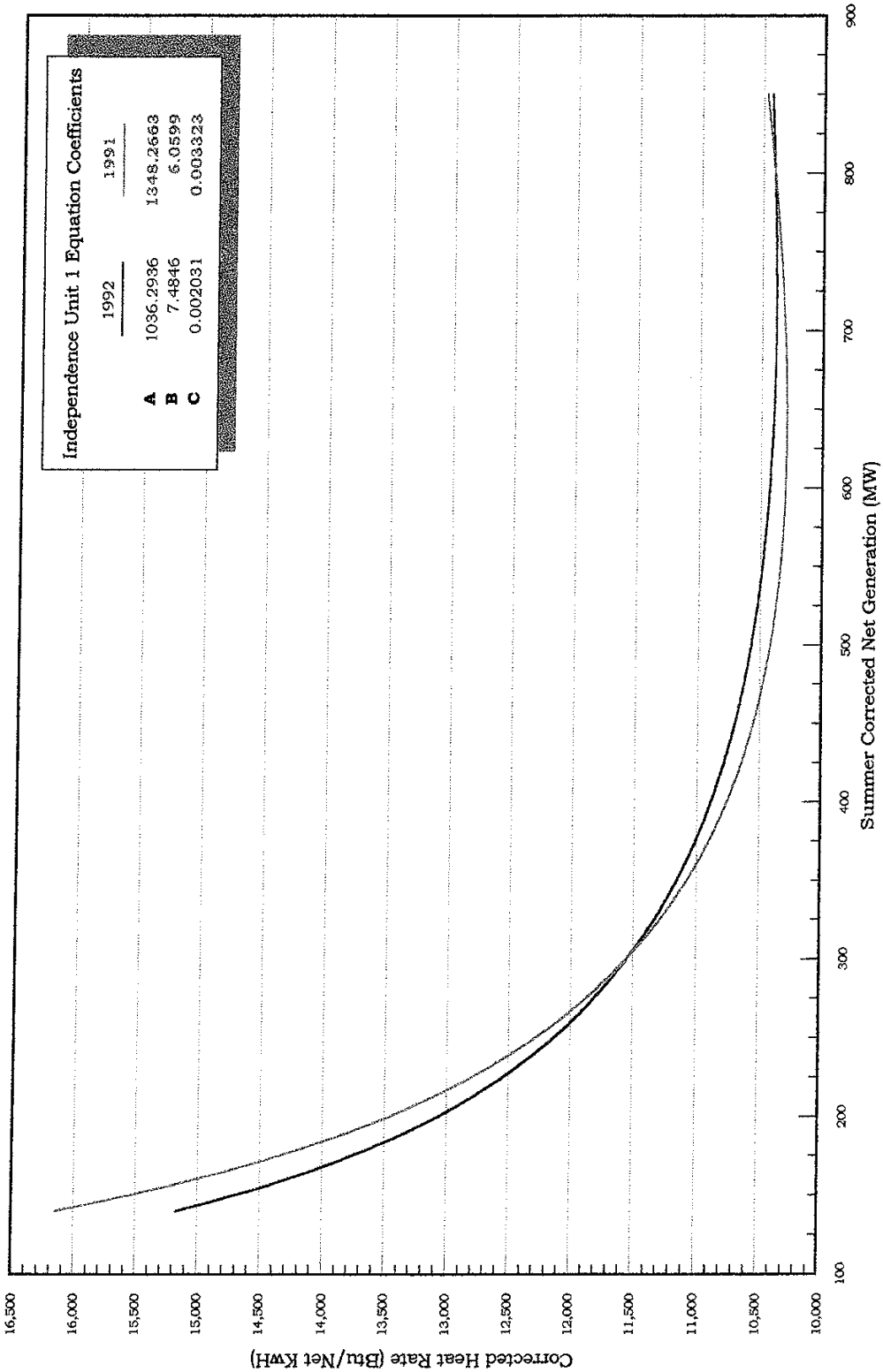


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

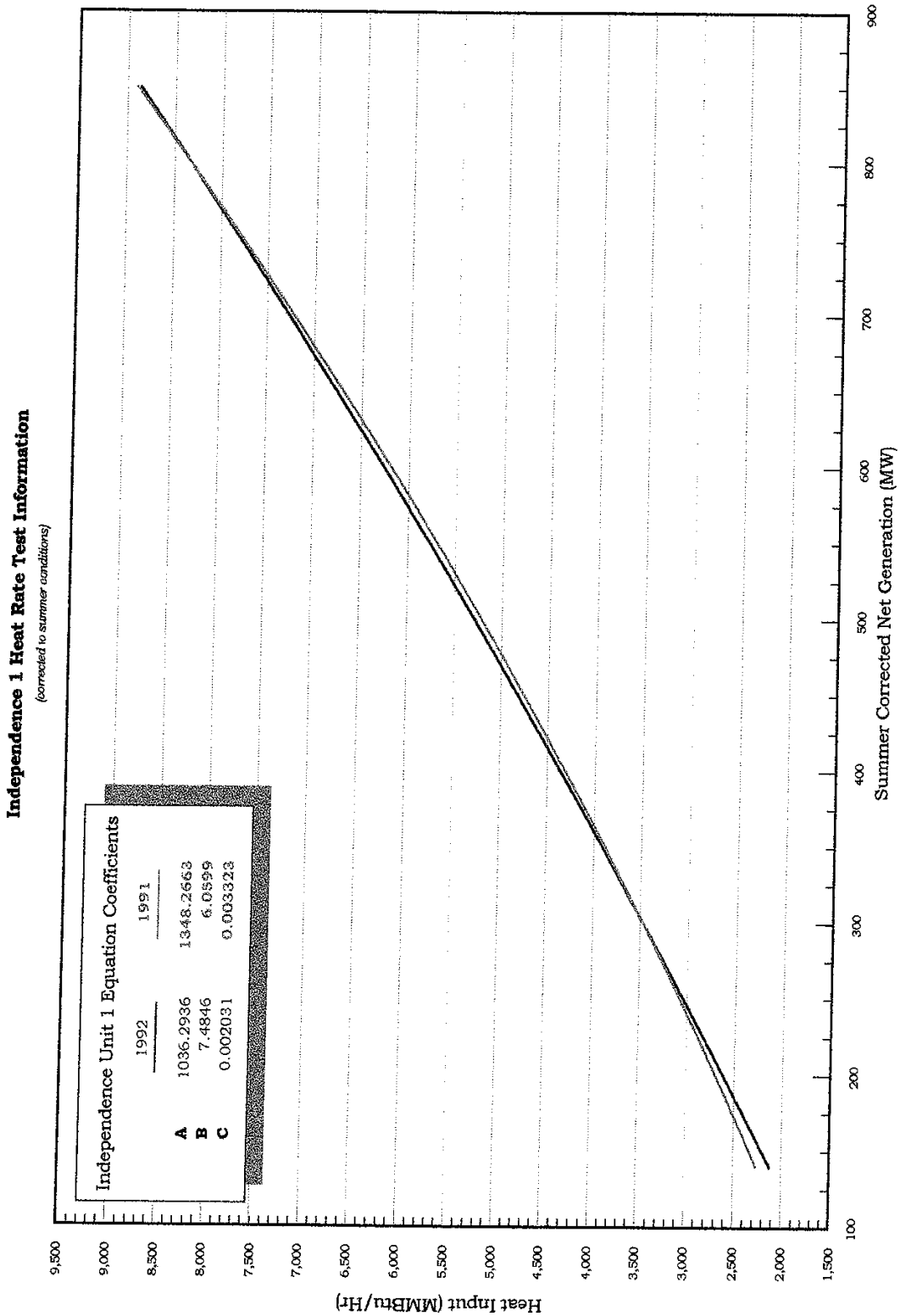
Independence 1 Heat Rate Test Information

(corrected to summer conditions)



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

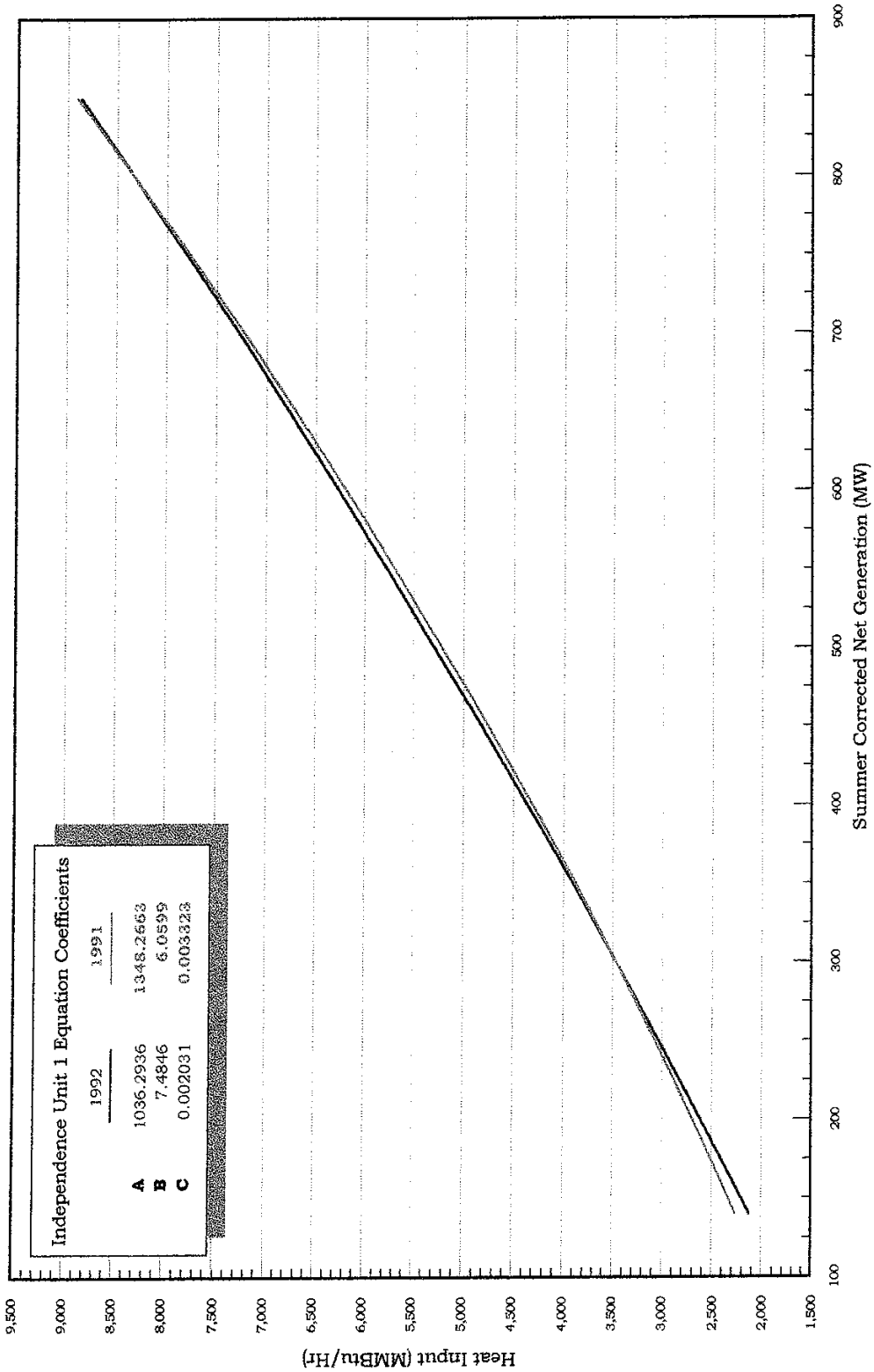


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence 1 Heat Rate Test Information

(corrected to summer conditions)

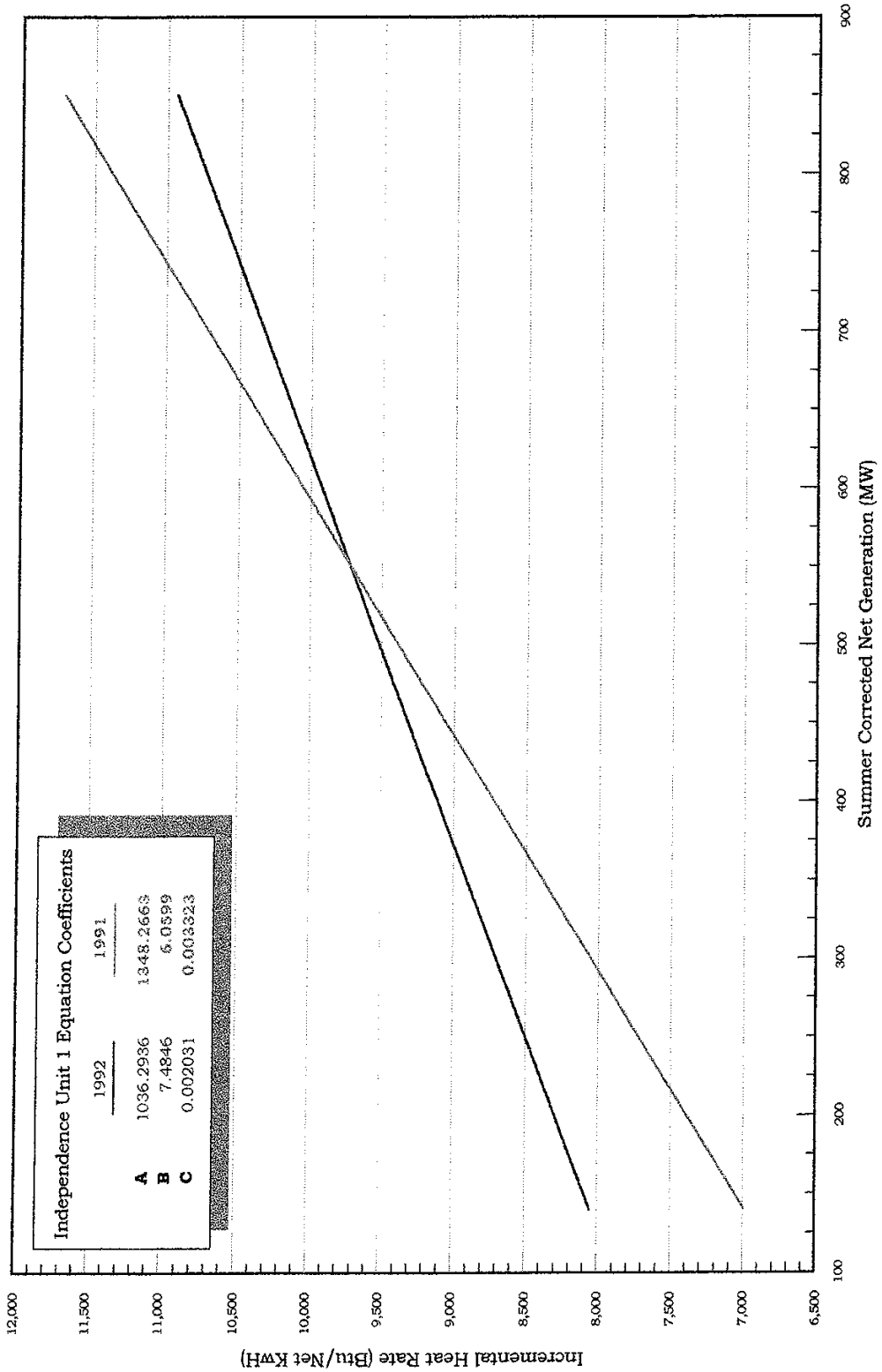


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence 1 Heat Rate Test Information

(corrected to summer conditions)

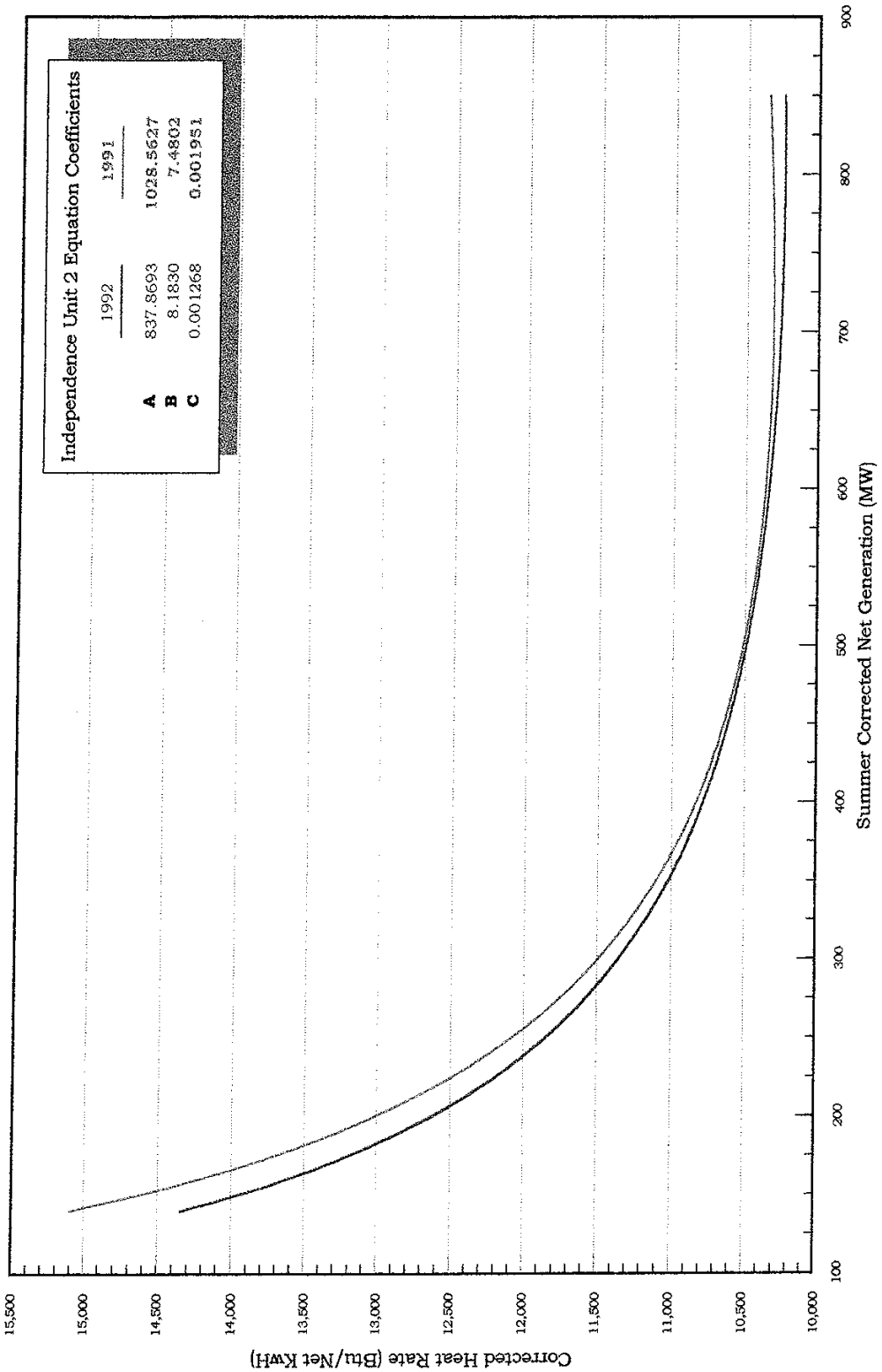


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence 2 Heat Rate Test Information

(corrected to summer conditions)

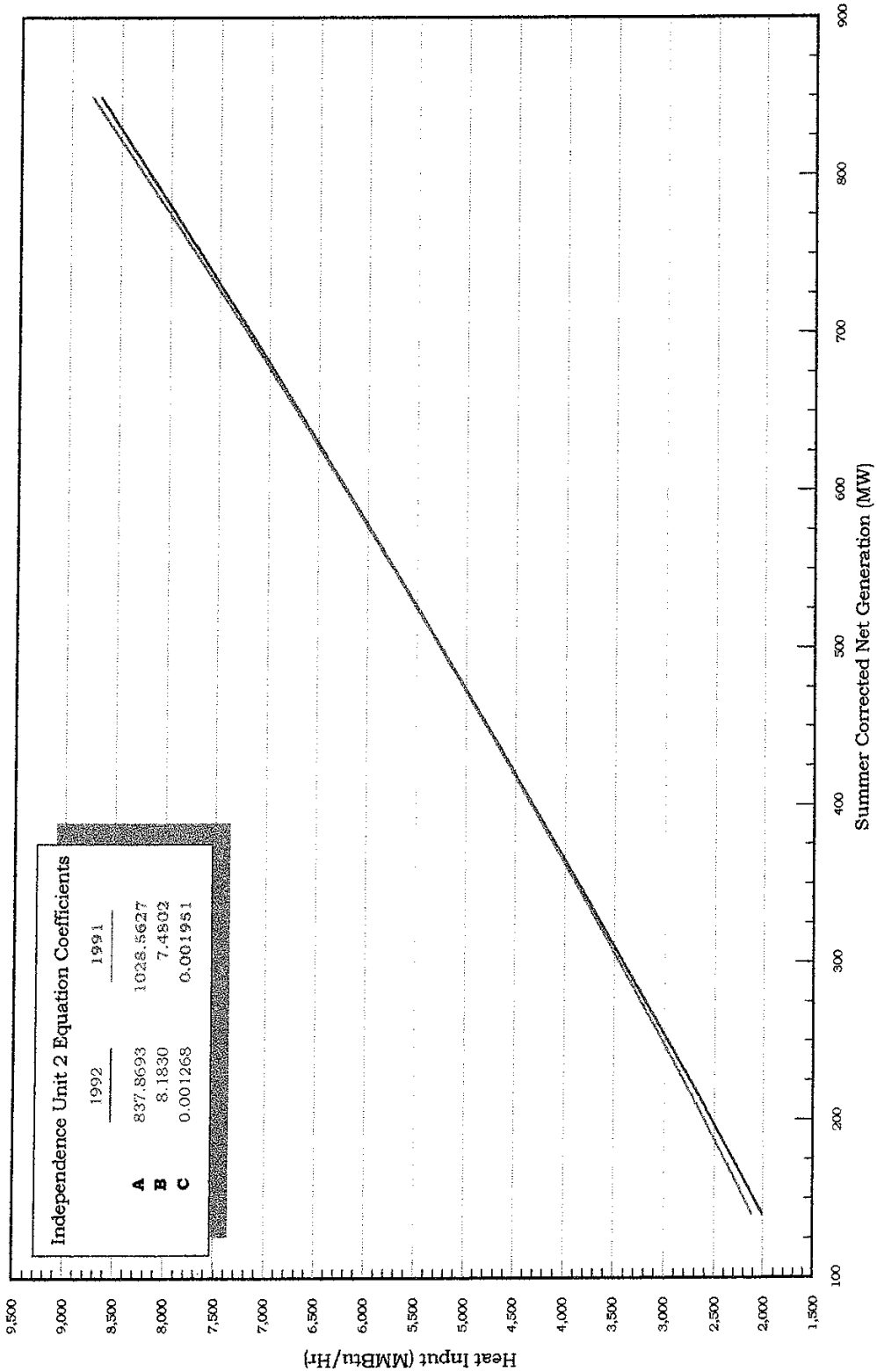


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence 2 Heat Rate Test Information

(corrected to summer conditions)

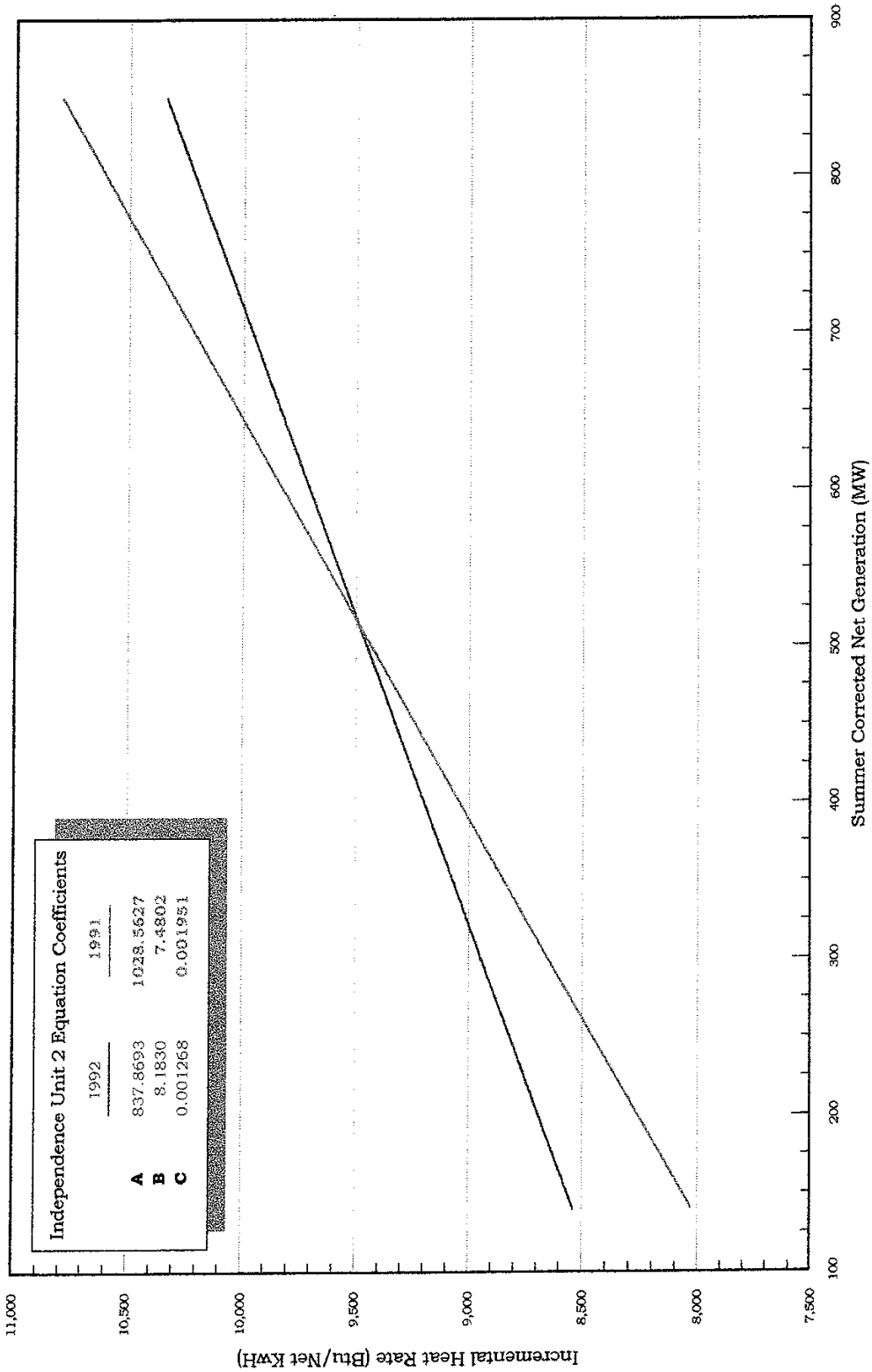


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence 2 Heat Rate Test Information

(corrected to summer conditions)



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

AP&L

Inter-Office
Correspondence

ISM6623

DATE: August 10, 1990

OFFICE: INDEPENDENCE STEAM ELECTRIC STATION

TO: Mickey Cox

FROM: Henry Jones

SUBJECT: 1990 Heat Rate Tests

The results of the 1990 ISES Units I & II heat rate tests have been summarized and are attached for your review. The tests were conducted in compliance with the Entergy Heat Rate Test Procedure. All co-owners were notified of the tests in advance and had the opportunity to witness the tests. The AECC had a representative on site to witness all the tests.

It is my opinion that the test results accurately represent the performance of the units and should be implemented by the System Operations Center for economic dispatch of the units. If you concur, please forward this information to the System Planning Department for their transmittal to the SOC and co-owners. If you have any questions or comments, please call me.

WHJ/RIL/dt

Attachment

cc: Wayne Garrison
Robert Hicks

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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Confidential Business Information

Independence Unit One

1990 Heat Rate Test Results

Corrected Net Generation (Net MW)	Heat Input (MMbtu/Hr)
155.9	2171.8
155.4	2164.9
228.2	2902.2
231.5	2932.9
303.0	3561.0
306.3	3568.5
375.3	4199.8
382.0	4229.3
444.1	4812.6
452.3	4810.3
552.5	5678.8
556.4	5687.8
609.3	6396.0
617.5	6411.0
680.0	6980.6
689.8	6983.7
766.8	7850.8
769.9	7848.2
821.3	8507.4
827.0	8577.9

① Heat Input Equation

1004.2594 + 7.7561(MW) + 0.001569(MW)(MW) MMbtu/Hr

② Incremental Heat Rate Equation

7756.1 + 3.138(MW) Btu/Net Kwh

③ Heat Rate Equation

1000(Heat Input Equation) / (MW) Btu/Net Kwh

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Independence Unit Two

1990 Heat Rate Test Results

Corrected Net Generation (Net MW)	Heat Input (MMbtu/Hr)
156.3	2260.1
158.4	2291.8
231.6	2833.3
231.7	2837.1
306.1	3542.0
305.8	3540.1
375.5	4162.1
378.7	4244.8
435.8	4751.3
439.3	4755.5
541.5	5657.3
548.0	5649.9
601.7	6156.2
605.2	6118.1
682.7	6762.5
679.7	6764.0
769.3	7778.2
764.0	7747.1
820.5	8294.1
823.2	8284.4

① Heat Input Equation

998.8728 + 7.9487(MW) + 0.001057(MW)(MW) MMbtu/Hr

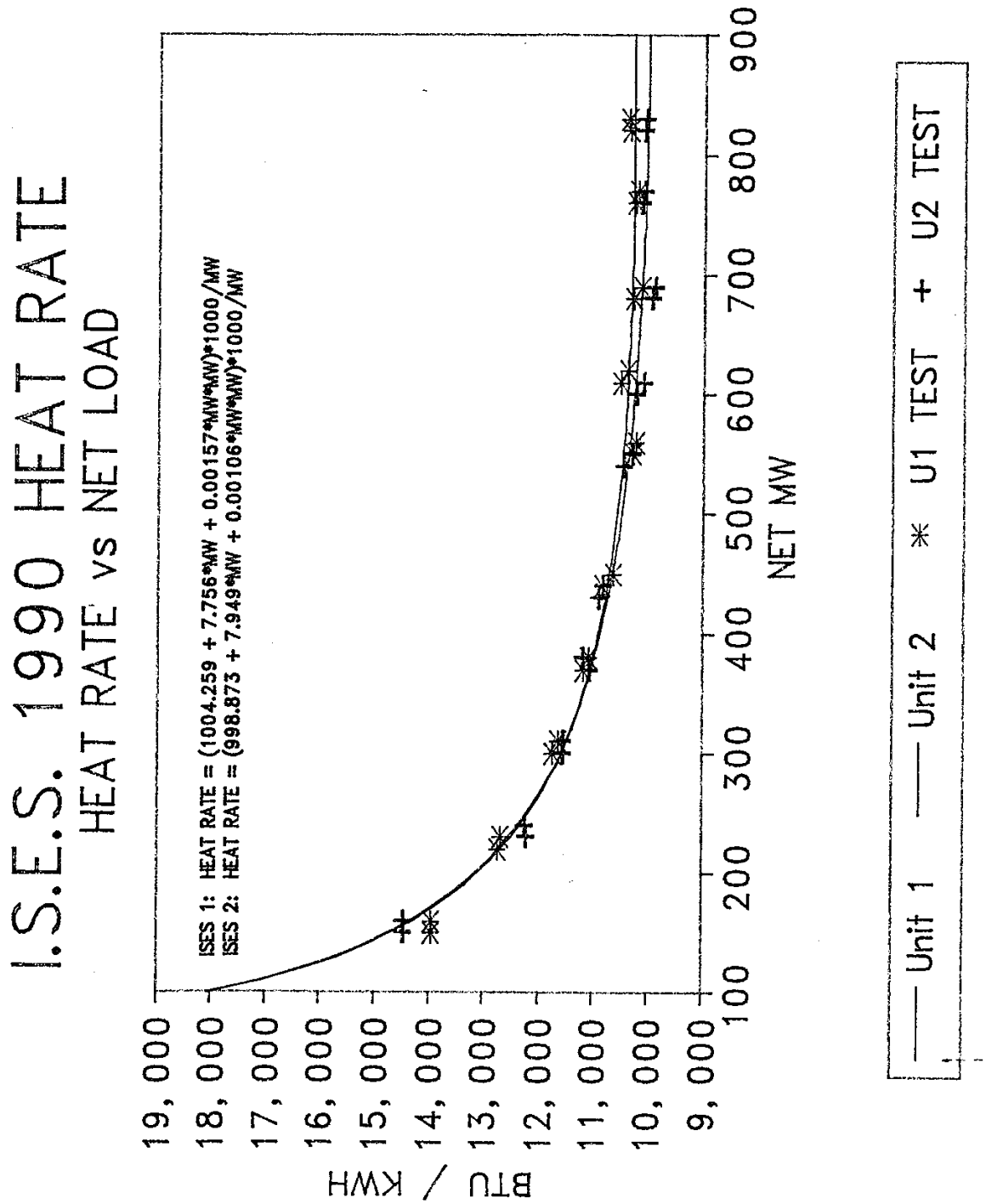
② Incremental Heat Rate Equation

7948.7 + 2.114(MW) Btu/Net Kwh

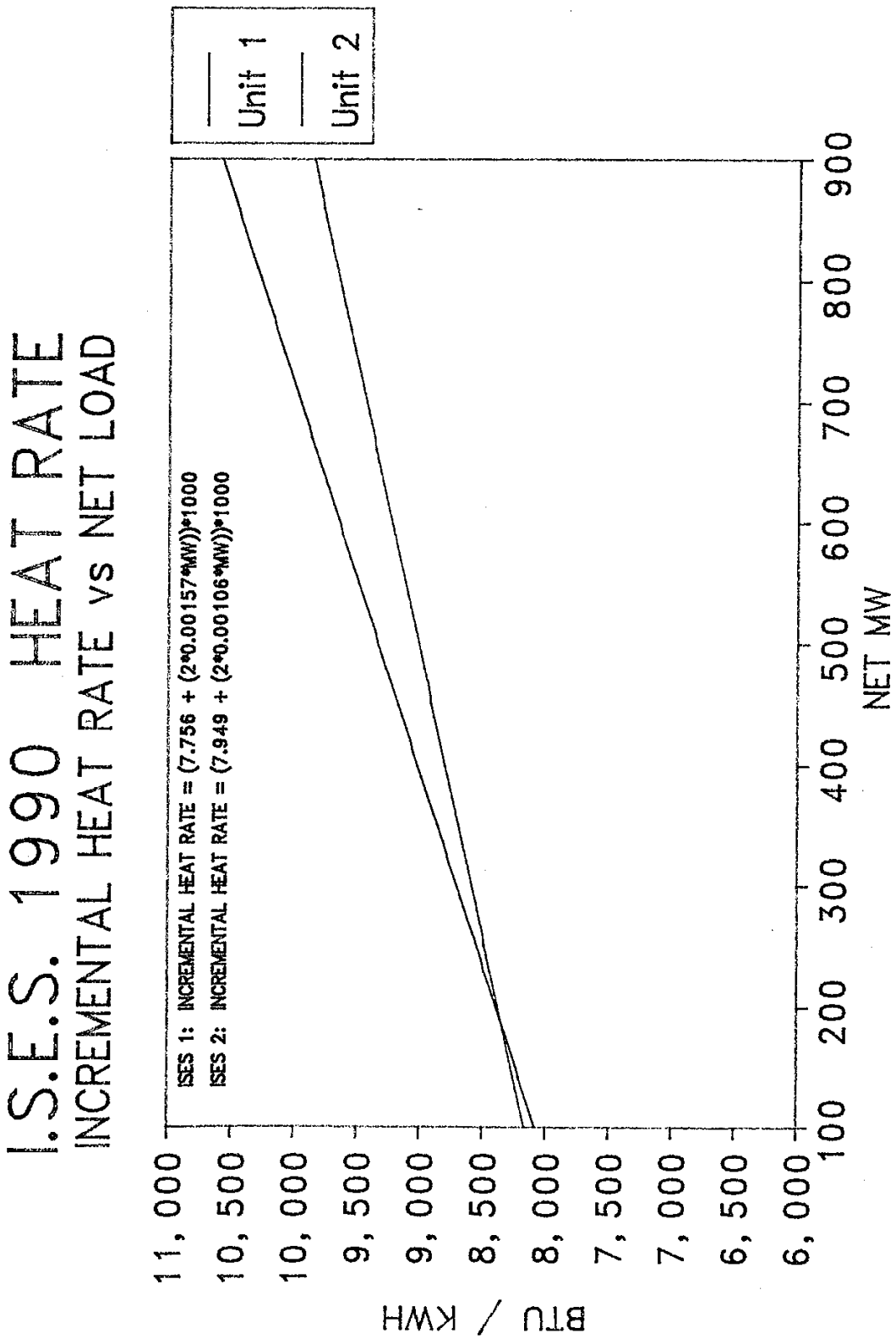
③ Heat Rate Equation

1000(Heat Input Equation) / (MW) Btu/Net Kwh

Claim Withdrawn. Contains No CBI. 07/11/2016_YD



Claim Withdrawn. Contains No CBI. 07/11/2016_YD



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

AP&L

~~DK~~
~~BC~~
RL

Inter-Office Correspondence

ISM7778

DATE: October 25, 1991

OFFICE: INDEPENDENCE STEAM ELECTRIC STATION

TO: Mickey Cox

FROM: Henry Jones

SUBJECT: ISES 1991 Heat Rate Test Results

The results of the 1991 ISES Units 1 and 2 heat rate tests have been summarized and are attached for your review. The tests were conducted in compliance with the Entergy Heat Rate Test Procedure. All co-owners were notified of the tests in advance and had the opportunity to witness the tests. The AECC was the only co-owner to have a witness on site for the tests.

The Unit 1 tests were performed with a high pressure heater train isolated. This unit has operated over 180 days this year with a high pressure heater train isolated and is operating in this condition at the present time. This curve is representative of how the unit operates most of the time. The curve can be updated if the condition of the unit improves before the next scheduled heat rate tests during the summer of 1992. The co-owners should not have a problem with this curve because the 60% heat rate point is actually better than the Unit 2 60% heat rate.

The Unit 2 tests were performed with all the high pressure feedwater heaters in service.

It is my opinion that the test results accurately represent the performance of the units and should be implemented by the System Operations Center for economic dispatch of the units. If you concur, please forward these results to the SOC in order to update the BPMS coefficients for ISES and also to Mr. Alan Hardy, State Director of Bulk Power Marketing, for use in co-owner billing and related matters.

WHJ/RIL/dt

Attachments

cc: Etienne Senac
Robert Hicks

An Entergy Company

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

1991 Heat Rate Test Information
Independence Steam Electric Station
Unit 1

Summer Corrected Net Generation	Heat Input
(MW)	(MMBtu/Hr)
231.9	2900.1
231.9	2922.0
304.5	3554.1
312.3	3562.8
460.5	4817.3
524.9	5590.2
536.2	5569.4
618.9	6315.7
623.3	6350.1
677.6	6997.7
685.8	6975.5
776.8	8108.2
782.1	8169.5
835.4	8748.8
836.4	8704.2

Input/Output Equation:

Heat Input(MMBtu/Hr)=1348.2663+6.0599*(NetMW)+0.003323*$(NetMW)^2$

Incremental Heat Rate Equation:

Incremental Heat Rate(Btu/Net Kwh)=(6.0599+2*0.003323*(NetMW))*1000

Net Heat Rate Equation:

Net Heat Rate(Btu/NetKwH)=(1348.2663+6.0599*(NetMW)+0.003323*$(NetMW)^2$)*1000/(NetMW)

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

1991 Heat Rate Test Information
Independence Steam Electric Station
Unit 2

Summer Corrected Net Generation	Heat Input
(MW)	(MMBtu/Hr)
162.4	2350.4
231.4	2816.9
231.2	2819.0
382.1	4164.9
382.0	4139.6
465.5	4961.4
466.9	4828.6
545.6	5670.1
547.8	5662.2
613.1	6422.1
612.3	6406.1
687.5	7120.2
691.7	7123.8
767.3	8015.7
767.3	8063.6
835.7	8513.0
837.3	8567.0

Input/Output Equation:

Heat Input(MMBtu/Hr)=1028.5627+7.4802*(NetMW)+0.001951*(NetMW)^2

Incremental Heat Rate Equation:

Incremental Heat Rate(Btu/Net Kwh)=(7.4802+2*0.001951*(NetMW))*1000

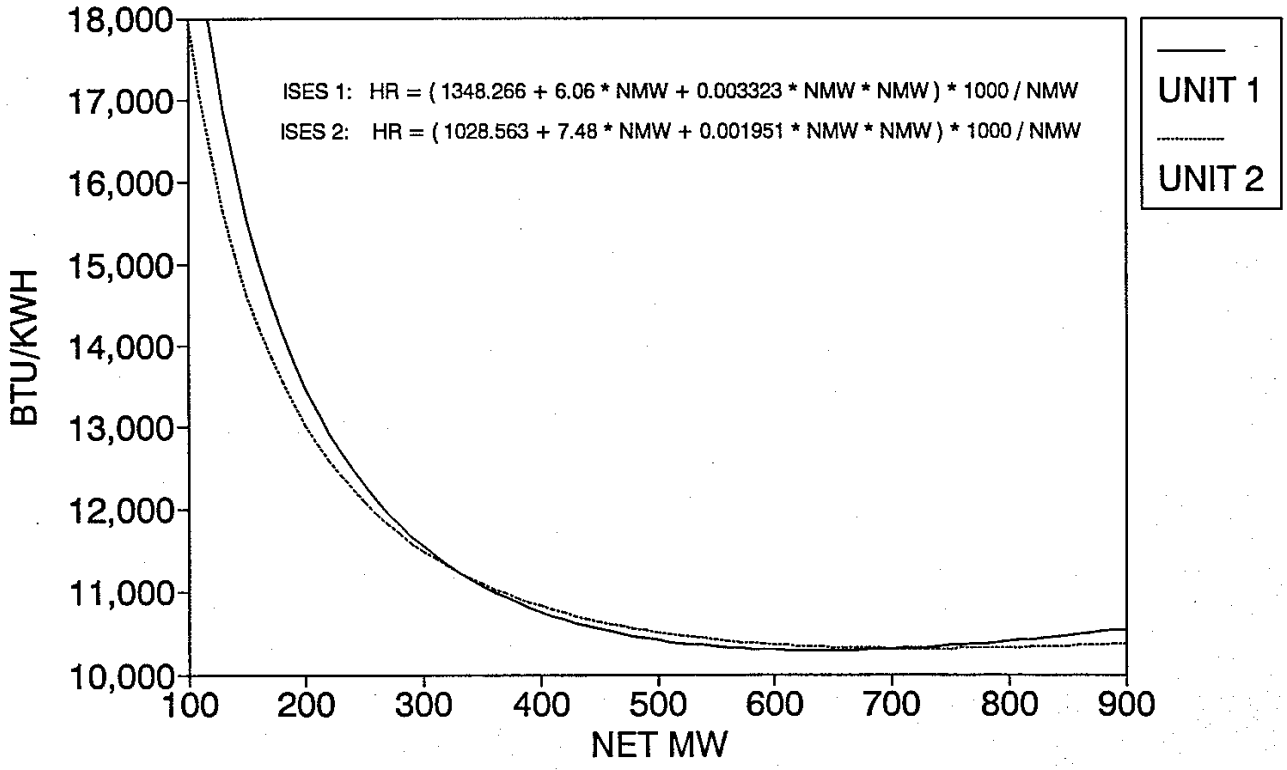
Net Heat Rate Equation:

Net Heat Rate(Btu/NetKwH)=(1028.5627+7.4802*(NetMW)+0.001951*(NetMW)^2)*1000/(NetMW)

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

I.S.E.S. 1991 HEAT RATE

HEAT RATE vs NET LOAD

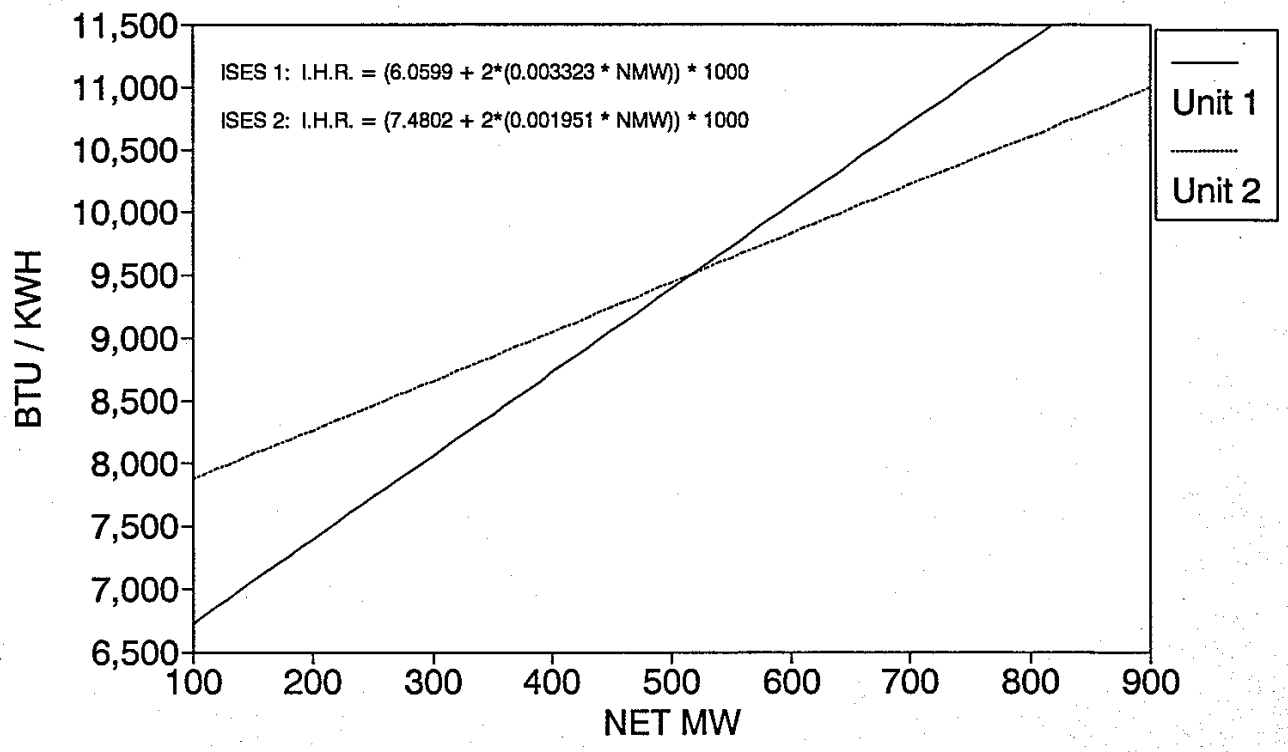


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

I.S.E.S. 1991 HEAT RATE

INCREMENTAL HEAT RATE vs NET LOAD

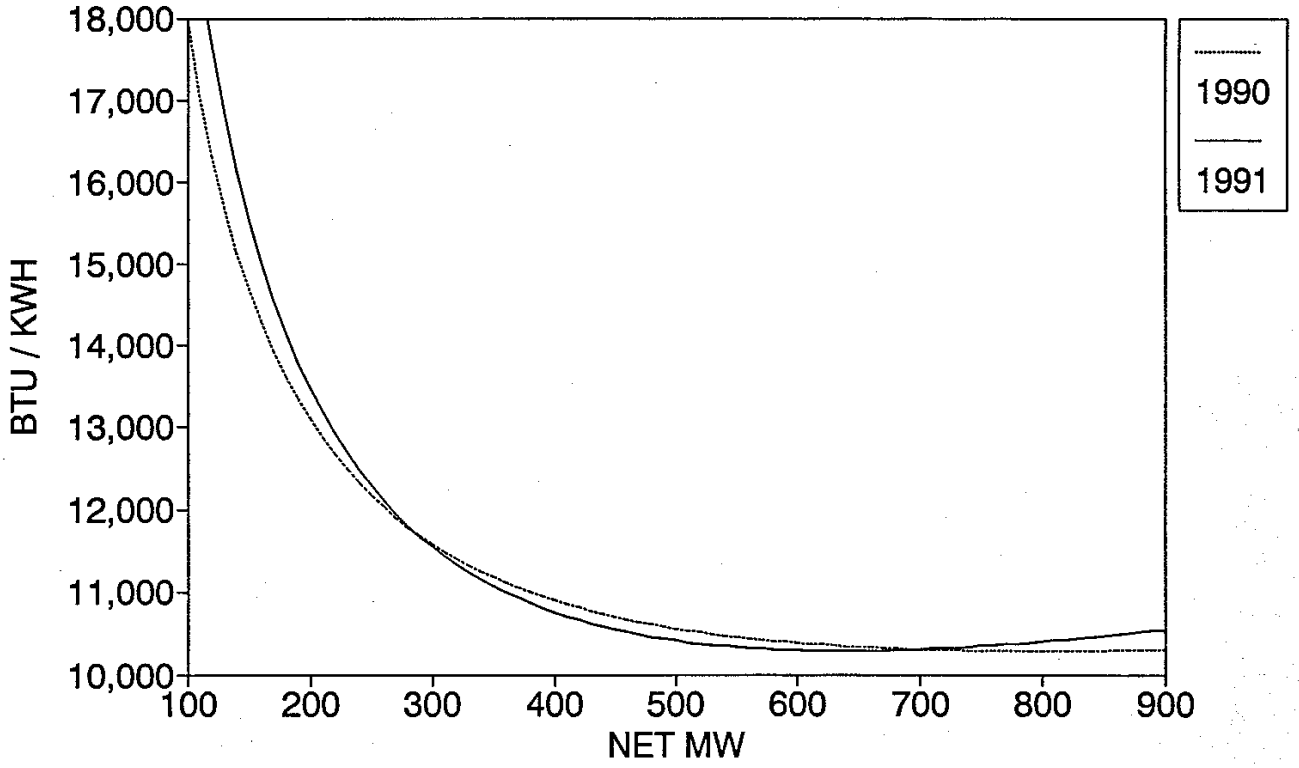


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

I.S.E.S. UNIT 1 HEAT RATE

HEAT RATE vs NET LOAD

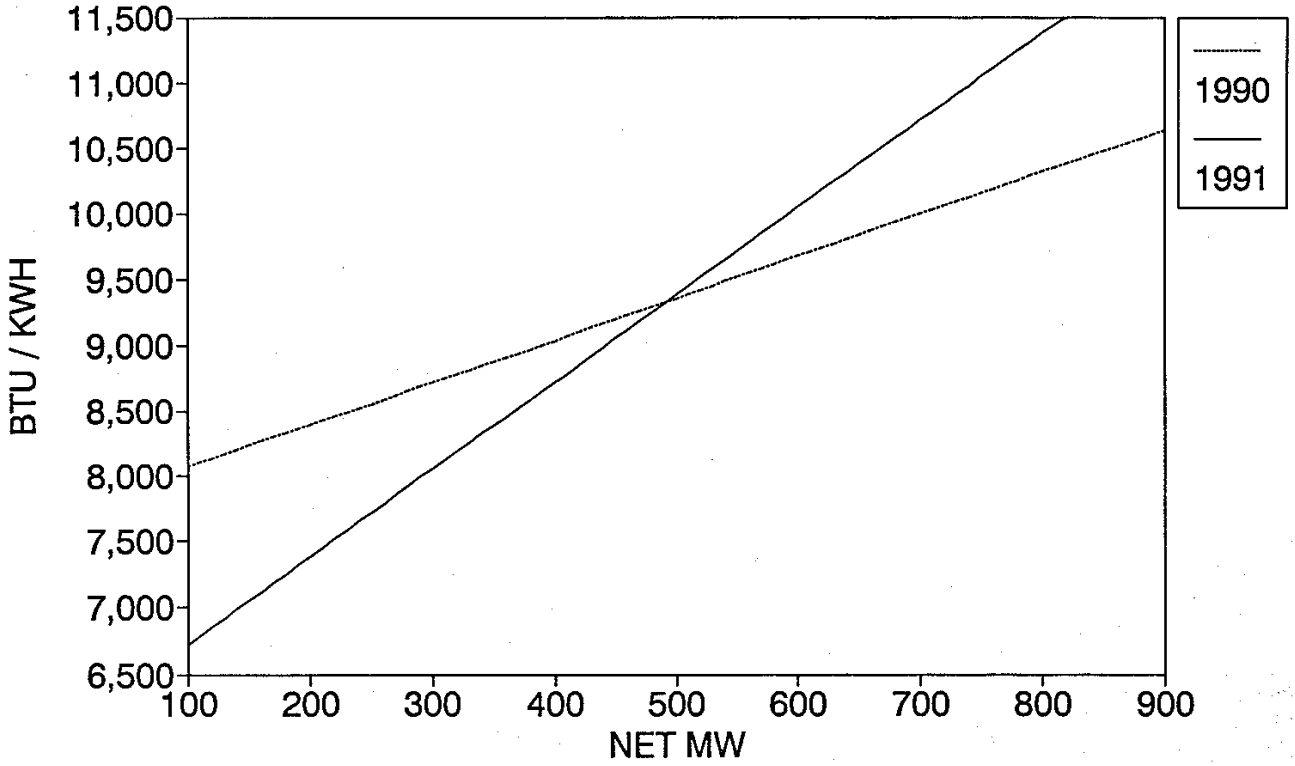


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

I.S.E.S. UNIT 1 HEAT RATE

INCREMENTAL HEAT RATE vs NET LOAD

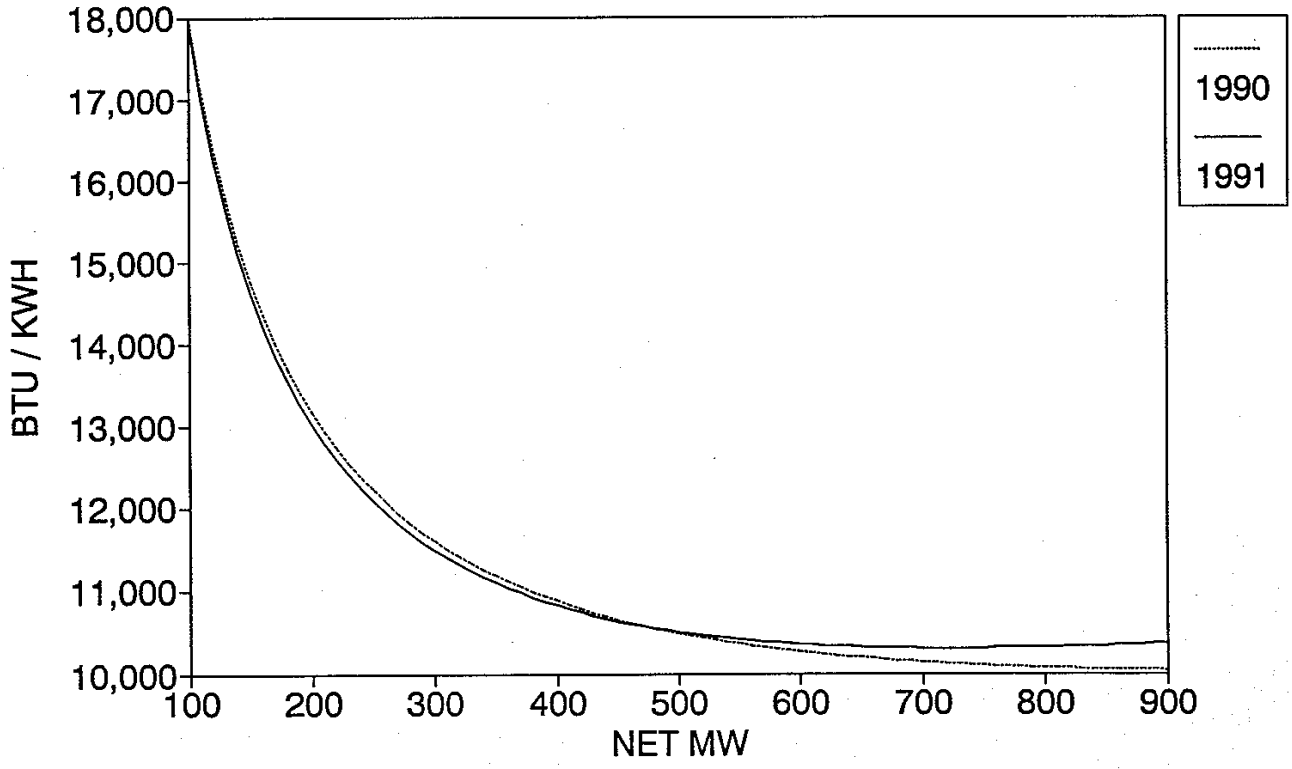


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

I.S.E.S. UNIT 2 HEAT RATE

HEAT RATE vs NET LOAD

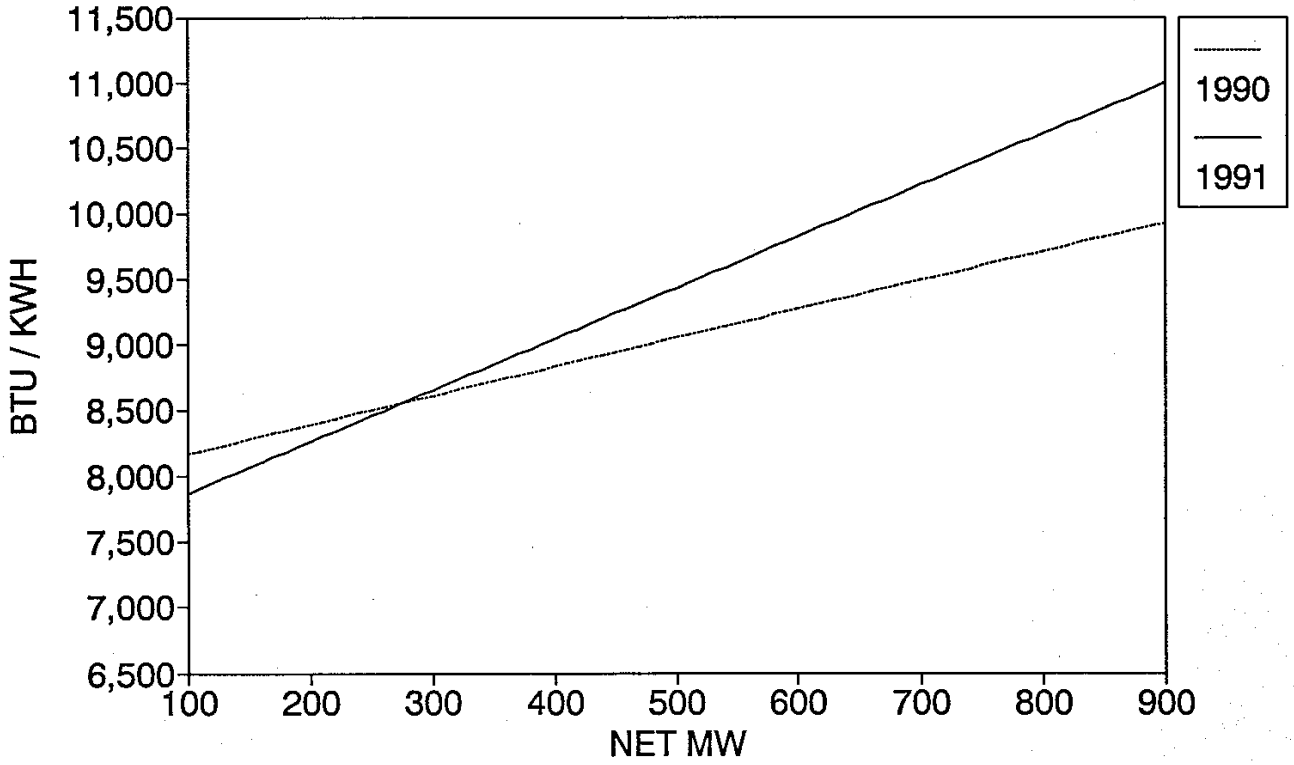


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

I.S.E.S. UNIT 2 HEAT RATE

INCREMENTAL HEAT RATE VS NET LOAD

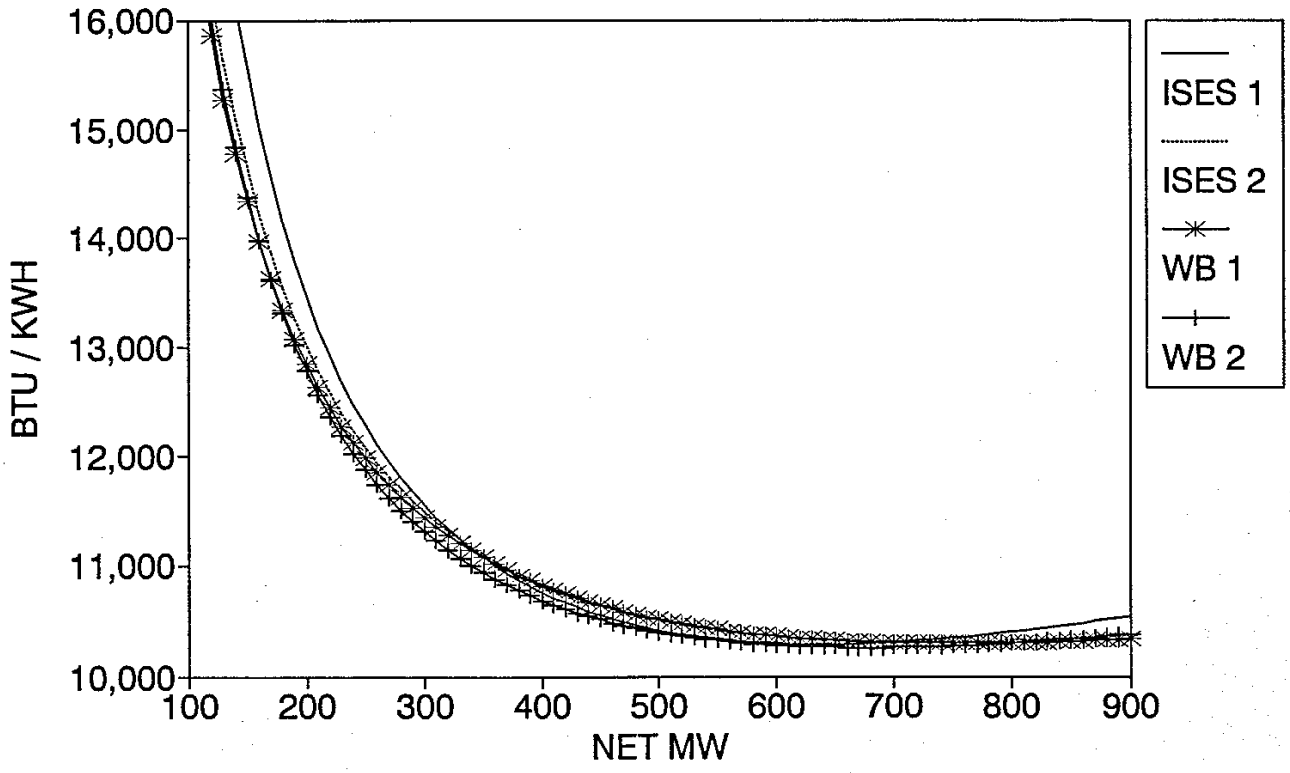


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

1991 COAL PLANT HEAT RATES

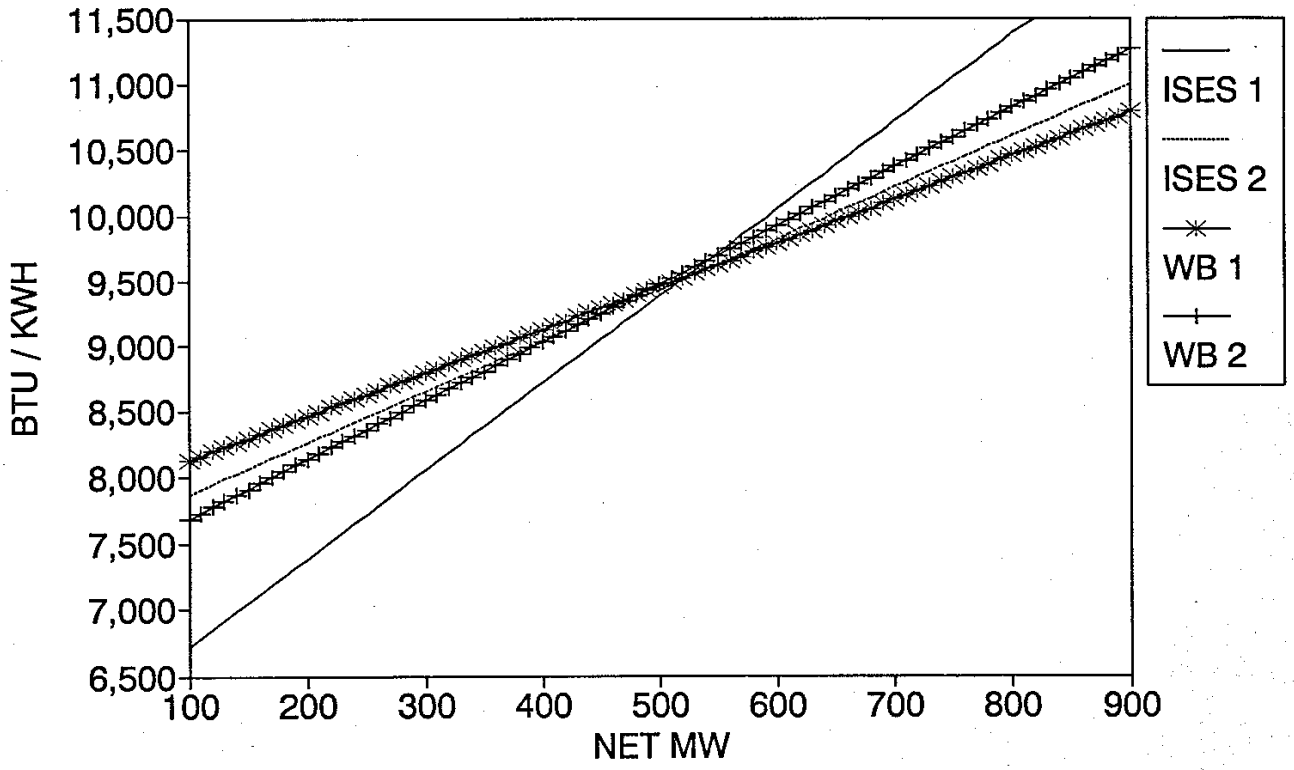
HEAT RATE vs NET LOAD



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

1991 COAL PLANT HEAT RATES

INCREMENTAL HEAT RATE vs NET LOAD



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:01:19

Independence

HEAT RATE CORRECTIONS FOR ONE (8/5/93)

MEASURED TEST INPUTS FROM FILE i1hr93.626

THE AVERAGE GROSS GENERATION IS..... 656.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.07 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 109.24 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.57 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.32 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.67 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 64.97 PCT
THE AVERAGE COAL FLOW IS..... 752100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8415.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.67 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.60 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.88 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.84 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.64 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4252668.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.32 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.05 %
BPCHG = 1.31
KWCHG = -1.29
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012889 %

THE CORRECTED GROSS GENERATION IS..... 647.65 MWe

THE CORRECTED NET GENERATION IS..... 617.75 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10108.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10245.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6329.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:01:32

HEAT RATE CORRECTIONS FOR ONE (8/5/93)

MEASURED TEST INPUTS FROM FILE i1hr93.632

THE AVERAGE GROSS GENERATION IS..... 663.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.14 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.10 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.54 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 65.28 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.27 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 65.69 PCT
THE AVERAGE COAL FLOW IS..... 764000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8464.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.56 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.93 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.82 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.43 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.79 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4305245.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.10 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.68 %
BPCHG = 1.47
KWCHG = -1.45
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014489 %

THE CORRECTED GROSS GENERATION IS..... 653.53 MWe

THE CORRECTED NET GENERATION IS..... 622.83 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10227.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10383.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6467.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:01:47

HEAT RATE CORRECTIONS FOR ONE (8/6/93)

MEASURED TEST INPUTS FROM FILE i1hr93.689

THE AVERAGE GROSS GENERATION IS..... 721.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.24 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.65 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.13 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.85 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.83 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.24 PCT
THE AVERAGE COAL FLOW IS..... 804300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8766.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 21.52 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.82 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.23 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.54 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.75 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4717186.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.51 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.57 %
BPCHG = 0.96
KWCHG = -0.95
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009477 %

THE CORRECTED GROSS GENERATION IS..... 714.23 MWe

THE CORRECTED NET GENERATION IS..... 682.13 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10235.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10336.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7051.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:01:58

HEAT RATE CORRECTIONS FOR ONE (8/6/93)

MEASURED TEST INPUTS FROM FILE i1hr93.696

THE AVERAGE GROSS GENERATION IS..... 729.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 33.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.24 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.71 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.07 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.40 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 70.31 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 81.31 PCT
THE AVERAGE COAL FLOW IS..... 810600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8686.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 21.64 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.99 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.05 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.13 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.82 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4773525.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.45 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.41 %
BPCHG = 1.07
KWCHG = -1.06
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010569 %

THE CORRECTED GROSS GENERATION IS..... 721.38 MWe

THE CORRECTED NET GENERATION IS..... 688.08 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10121.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10233.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7041.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:02:10

HEAT RATE CORRECTIONS FOR ONE (8/10/93)

MEASURED TEST INPUTS FROM FILE i1hr93.772

THE AVERAGE GROSS GENERATION IS..... 808.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 35.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.27 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 120.53 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.61 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.56 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.32 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.20 PCT
THE AVERAGE COAL FLOW IS..... 929500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8663.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 23.92 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.37 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.59 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.83 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.41 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5478828.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.41 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.17 %
BPCHG = 0.24
KWCHG = -0.24
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.002420 %

THE CORRECTED GROSS GENERATION IS..... 806.05 MWe

THE CORRECTED NET GENERATION IS..... 770.45 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10425.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10451.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8052.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:02:21

HEAT RATE CORRECTIONS FOR ONE (8/10/93)

MEASURED TEST INPUTS FROM FILE i1hr93.776

THE AVERAGE GROSS GENERATION IS..... 814.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.38 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 121.31 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 97.21 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.82 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.25 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 68.24 PCT
THE AVERAGE COAL FLOW IS..... 939100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8617.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 24.10 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.24 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.91 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.87 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.45 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5536318.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.21 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.08 %
BPCHG = 0.13
KWCHG = -0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001285 %

THE CORRECTED GROSS GENERATION IS..... 812.96 MWe

THE CORRECTED NET GENERATION IS..... 775.16 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10425.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10439.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8092.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:02:31

HEAT RATE CORRECTIONS FOR ONE (8/10/93)

MEASURED TEST INPUTS FROM FILE i1hr93.831

THE AVERAGE GROSS GENERATION IS..... 871.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 40.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.81 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 124.37 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 98.71 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.49 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.95 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.01 PCT
THE AVERAGE COAL FLOW IS..... 1024000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8524.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.66 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.32 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.32 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.71 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.81 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6001117.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.50 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.50 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 871.00 MWe

THE CORRECTED NET GENERATION IS..... 831.00 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10504.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10504.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8728.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:02:48

HEAT RATE CORRECTIONS FOR ONE (8/10/93)

MEASURED TEST INPUTS FROM FILE i1hr93.839

THE AVERAGE GROSS GENERATION IS..... 878.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.02 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 125.84 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 100.04 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.65 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.05 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.39 PCT
THE AVERAGE COAL FLOW IS..... 1035600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8502.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.80 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.21 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.59 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 99.42 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.94 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6076866.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.81 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.69 %
BPCHG = -0.12
KWCHG = 0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998793 %

THE CORRECTED GROSS GENERATION IS..... 879.06 MWe

THE CORRECTED NET GENERATION IS..... 839.86 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10496.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10483.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8804.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:00:30

HEAT RATE CORRECTIONS FOR ONE (8/3/93)

MEASURED TEST INPUTS FROM FILE i1hr93.462

THE AVERAGE GROSS GENERATION IS..... 490.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.69 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.91 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.76 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.58 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.97 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.59 PCT
THE AVERAGE COAL FLOW IS..... 571300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8458.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.15 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.27 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.88 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.38 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.15 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3159193.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.64 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.30 %
BPCHG = 1.42
KWCHG = -1.40
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014022 %

THE CORRECTED GROSS GENERATION IS..... 483.22 MWe

THE CORRECTED NET GENERATION IS..... 455.12 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10461.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10617.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4832.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:00:41

HEAT RATE CORRECTIONS FOR ONE (8/3/93)

MEASURED TEST INPUTS FROM FILE i1hr93.472

THE AVERAGE GROSS GENERATION IS..... 500.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.75 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.65 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.36 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.12 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.66 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.92 PCT
THE AVERAGE COAL FLOW IS..... 576500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8418.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.29 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.42 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.88 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.82 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.11 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3223328.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.37 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.32 %
BPCHG = 1.11
KWCHG = -1.10
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010966 %

THE CORRECTED GROSS GENERATION IS..... 494.58 MWe

THE CORRECTED NET GENERATION IS..... 466.08 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10292.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10412.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4853.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:00:54

HEAT RATE CORRECTIONS FOR ONE (8/4/93)

MEASURED TEST INPUTS FROM FILE i1hr93.549

THE AVERAGE GROSS GENERATION IS..... 578.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.02 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 109.77 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.38 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.59 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.83 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 76.84 PCT
THE AVERAGE COAL FLOW IS..... 691000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8362.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 17.39 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.58 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.97 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.76 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.40 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3747421.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.93 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.99 %
BPCHG = 0.98
KWCHG = -0.97
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009712 %

THE CORRECTED GROSS GENERATION IS..... 572.44 MWe

THE CORRECTED NET GENERATION IS..... 542.94 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10534.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10642.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5778.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 08:01:04

HEAT RATE CORRECTIONS FOR ONE (8/4/93)

MEASURED TEST INPUTS FROM FILE i1hr93.550

THE AVERAGE GROSS GENERATION IS..... 579.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.00 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 109.68 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.24 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.26 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.13 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.11 PCT
THE AVERAGE COAL FLOW IS..... 681800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8414.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 17.44 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.83 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.91 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.31 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.45 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3752294.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.96 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.86 %
BPCHG = 1.15
KWCHG = -1.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011333 %

THE CORRECTED GROSS GENERATION IS..... 572.51 MWe

THE CORRECTED NET GENERATION IS..... 543.41 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10432.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10556.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5736.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 07:57:38

HEAT RATE CORRECTIONS FOR ONE (8/2/93)

MEASURED TEST INPUTS FROM FILE i1hr93.159

THE AVERAGE GROSS GENERATION IS..... 183.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.30 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 102.37 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.89 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.34 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.28 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 80.55 PCT
THE AVERAGE COAL FLOW IS..... 248100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8717.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.48 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.29 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.07 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.67 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.22 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1245814.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.79 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.32 %
BPCHG = -0.60
KWCHG = 0.60
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.994014 %

THE CORRECTED GROSS GENERATION IS..... 184.10 MWe

THE CORRECTED NET GENERATION IS..... 160.10 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13602.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13509.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2162.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 07:57:57

HEAT RATE CORRECTIONS FOR ONE (8/2/93)

MEASURED TEST INPUTS FROM FILE i1hr93.164

THE AVERAGE GROSS GENERATION IS..... 189.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.27 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 101.81 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.25 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.32 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.69 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.14 PCT
THE AVERAGE COAL FLOW IS..... 251700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8698.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.56 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.94 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 91.73 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.04 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.19 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1281505.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.85 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.38 %
BPCHG = -0.60
KWCHG = 0.61
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.993943 %

THE CORRECTED GROSS GENERATION IS..... 190.15 MWe

THE CORRECTED NET GENERATION IS..... 164.75 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13382.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13289.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2189.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 07:58:16

HEAT RATE CORRECTIONS FOR ONE (8/3/93)

MEASURED TEST INPUTS FROM FILE i1hr93.231

THE AVERAGE GROSS GENERATION IS..... 256.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.25 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.92 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.65 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.63 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.53 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.75 PCT
THE AVERAGE COAL FLOW IS..... 329100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8472.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.27 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.11 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.31 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.85 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.47 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1703483.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.74 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.53 %
BPCHG = 1.35
KWCHG = -1.33
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013341 %

THE CORRECTED GROSS GENERATION IS..... 252.63 MWe

THE CORRECTED NET GENERATION IS..... 227.23 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12092.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12271.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2788.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 07:58:31

HEAT RATE CORRECTIONS FOR ONE (8/3/93)

MEASURED TEST INPUTS FROM FILE i1hr93.236

THE AVERAGE GROSS GENERATION IS..... 261.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.18 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.89 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.52 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.74 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.06 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 80.64 PCT
THE AVERAGE COAL FLOW IS..... 331200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8498.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.11 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.20 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.61 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.45 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1727243.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.04 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.56 %
BPCHG = 1.67
KWCHG = -1.64
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.016425 %

THE CORRECTED GROSS GENERATION IS..... 256.78 MWe

THE CORRECTED NET GENERATION IS..... 231.58 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11937.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12154.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2814.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 07:59:27

HEAT RATE CORRECTIONS FOR ONE (8/4/93)

MEASURED TEST INPUTS FROM FILE i1hr93.299

THE AVERAGE GROSS GENERATION IS..... 325.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.37 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.45 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.29 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.33 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.62 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 88.96 PCT
THE AVERAGE COAL FLOW IS..... 397200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8651.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.16 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.70 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 91.85 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.44 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.59 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2137279.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.98 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.99 %
BPCHG = 1.09
KWCHG = -1.07
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010736 %

THE CORRECTED GROSS GENERATION IS..... 321.55 MWe

THE CORRECTED NET GENERATION IS..... 295.35 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11500.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11634.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3436.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-21-1993 07:59:58

HEAT RATE CORRECTIONS FOR ONE (8/3/93)

MEASURED TEST INPUTS FROM FILE i1hr93.377

THE AVERAGE GROSS GENERATION IS..... 403.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.81 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.86 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.26 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.33 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.67 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 65.24 PCT
THE AVERAGE COAL FLOW IS..... 474300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8739.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.60 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.99 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.49 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.76 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.93 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2650110.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.13 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.69 %
BPCHG = 0.47
KWCHG = -0.47
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.004686 %

THE CORRECTED GROSS GENERATION IS..... 401.12 MWe

THE CORRECTED NET GENERATION IS..... 375.32 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10989.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11044.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4145.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

09-21-1993 08:00:17

HEAT RATE CORRECTIONS FOR ONE (8/3/93)

MEASURED TEST INPUTS FROM FILE i1hr93.385

THE AVERAGE GROSS GENERATION IS..... 411.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.90 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 108.75 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.69 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.41 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 81.44 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 76.26 PCT
THE AVERAGE COAL FLOW IS..... 481500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8745.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.06 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.88 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.71 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.52 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.96 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2707079.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.70 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.46 %
BPCHG = 0.26
KWCHG = -0.26
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.002591 %

THE CORRECTED GROSS GENERATION IS..... 409.94 MWe

THE CORRECTED NET GENERATION IS..... 383.64 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10946.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10976.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4211.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

ENTERGY

Inter-Office Correspondence

ISM9172

Date: October 13, 1993

To:

Mr. Mickey Cox	L-TLC-33F
Mr. Etienne Senac	A-ISES
Mr. Art Gilreath	L-TLC-32B
Mr. William Phillips	A-SOC-2
Mr. Alan Hardy	A-TCBY-28A

From: Pat Klepper

Subject: 1993 Heat Rate Test Results - Independence Unit One

Independence Unit One was heat rate tested in early August. The data was reduced and analyzed by Dennis Wall. I have reviewed his findings and concur with the recommendation on the attached letter.

Pat Klepper

WPK/dr

Attachments: October 7 Letter from Dennis Wall
Attachments to October 7th Letter

cc: Henry Jones (w/o attachments)

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

ENTERGY

October 7, 1993

Inter-Office Correspondence

TO: Mr. Pat Klepper

FROM: Dennis A. Wall
Senior Engineer, Diagnostic Services Section

SUBJECT: 1993 Heat Rate Test Results - Independence Unit 1

Independence Unit 1 was tested the weeks of August 1st and August 8th. My calculations, evaluation, and review of results have now been completed, and the results are attached for your review. For your convenience, a graphical comparison with 1992's results are also included. As always, these tests were run in an unbiased manner in accordance with the Entergy test procedure. Co-owners were notified prior to the tests, and engineers from the Arkansas Electric Co-operative Corporation were present.

Although slight, there is some difference between the 1992 and 1993 curves. During both years this unit was tested, and has operated a significant portion of time, with a train of high pressure heaters isolated because of tube leaks. **I recommend that the 1993 results be implemented immediately for dispatch and co-owner billing purposes, since they best represent the present condition of the unit.** If you agree, please send a copy of this memo, with all attachments, to the persons on the enclosed distribution list.

If you need any additional information, or if you have any comments, please do not hesitate to contact me at telephone extension 4321.

DAW/dw
Attachments

Dennis A. Wall

cc: Mr. Henry Jones A-ISES
Mr. John Harrison L-TLC-32J
Mr. Gary Davis A-TCBY-28B

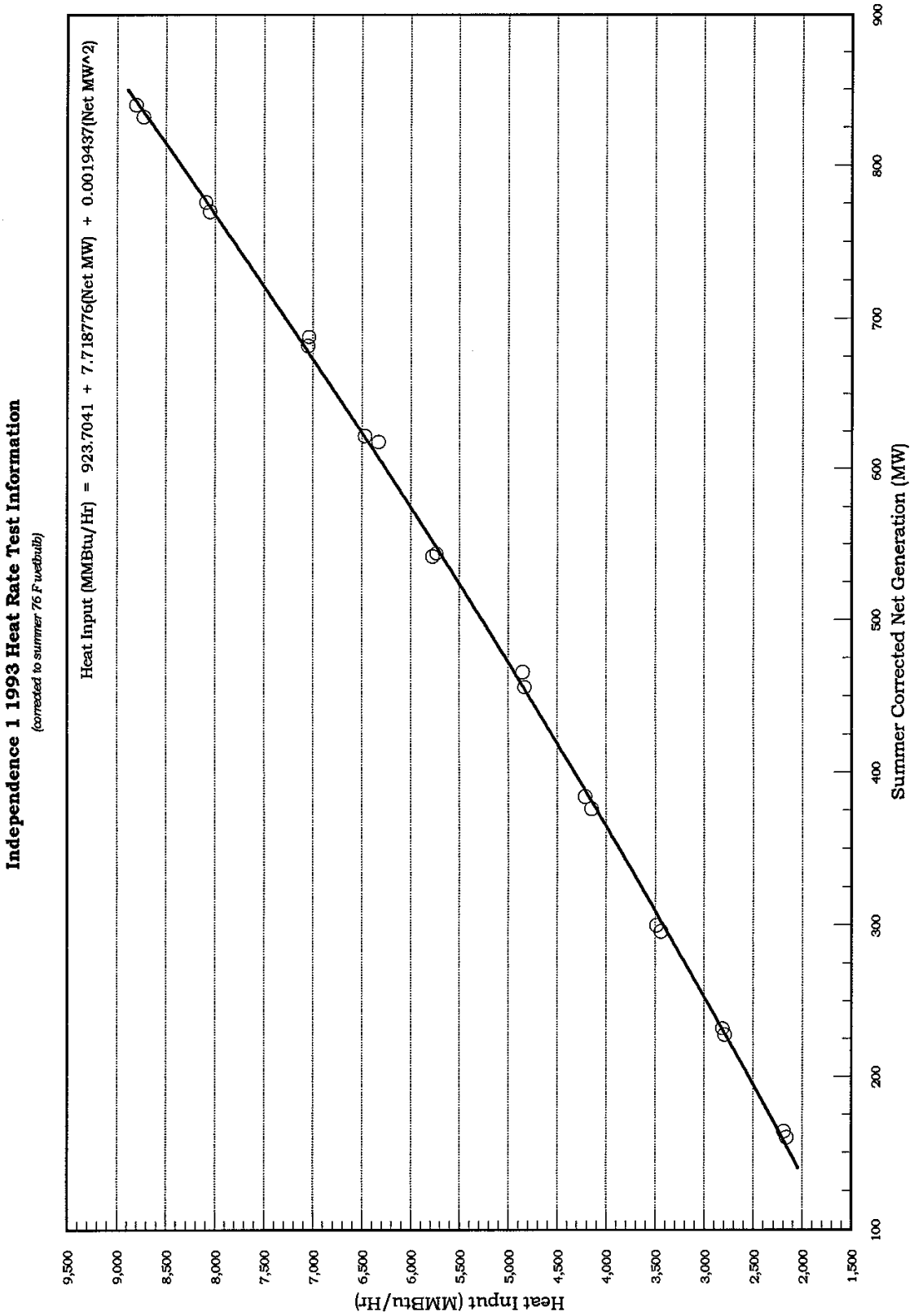
Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

DISTRIBUTION:

Mr. Mickey Cox	L-TLC-33F
Mr. Etienne Senac	A-ISES
Mr. Art Gilreath	L-TLC-32B
Mr. William Phillips	A-SOC-2
Mr. Alan Hardy	A-TCBY-28A

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

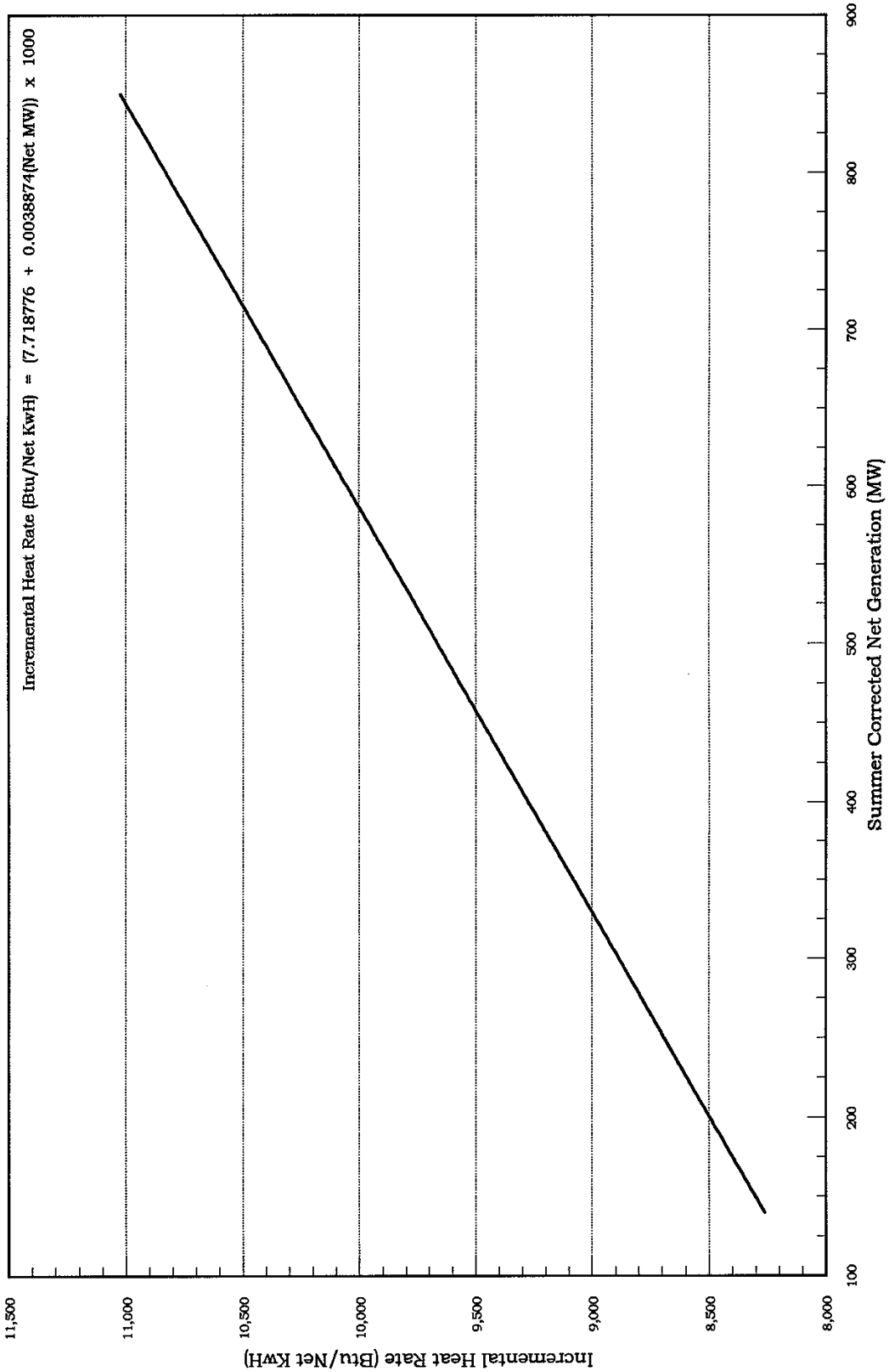


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence 1 1993 Heat Rate Test Information

(corrected to summer 76 F wetbulb)



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

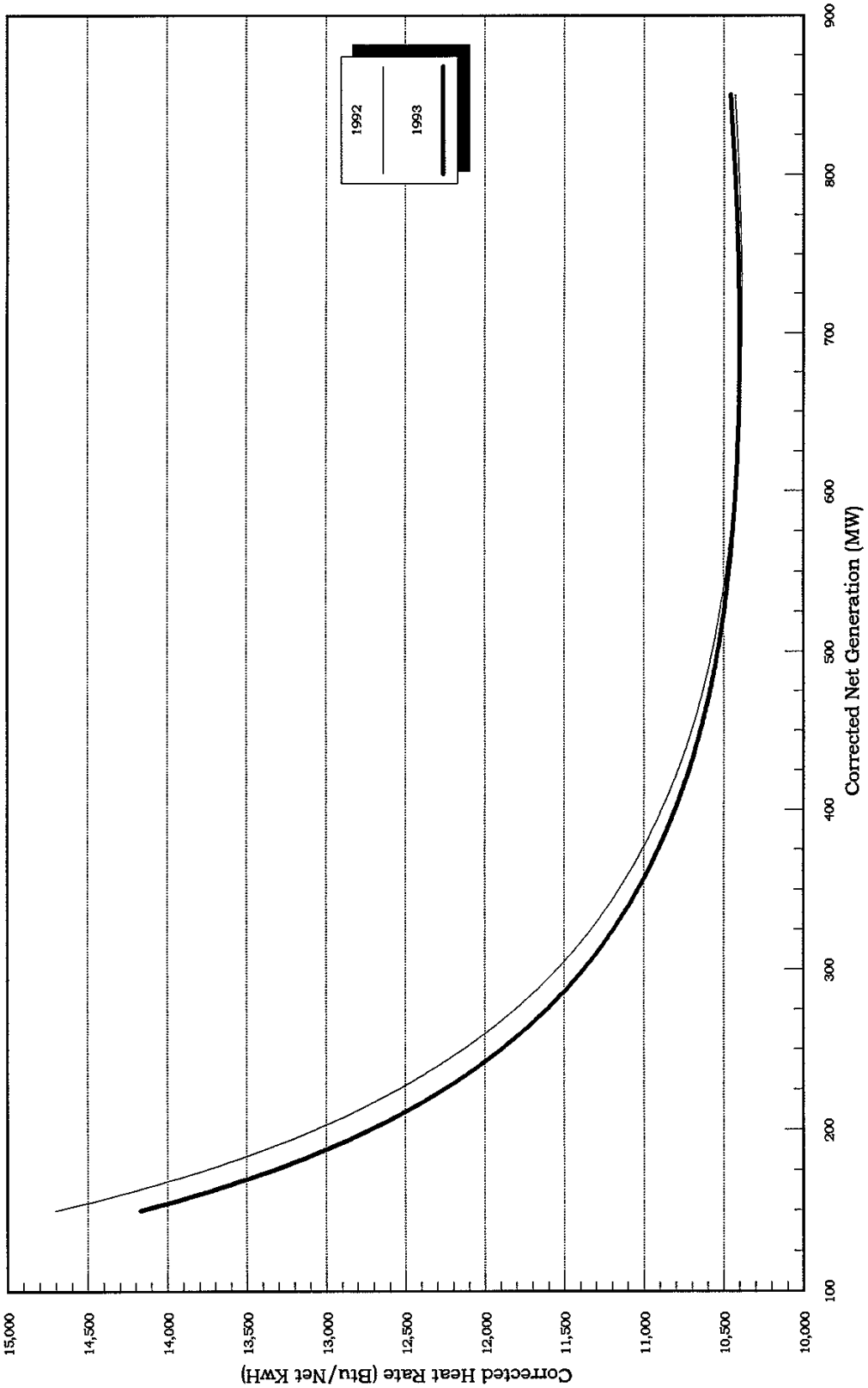
Confidential Business Information

ISES_00005531

Heat Rate Test Information

Independence SES Unit 1

(corrected to summer wet bulb)



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

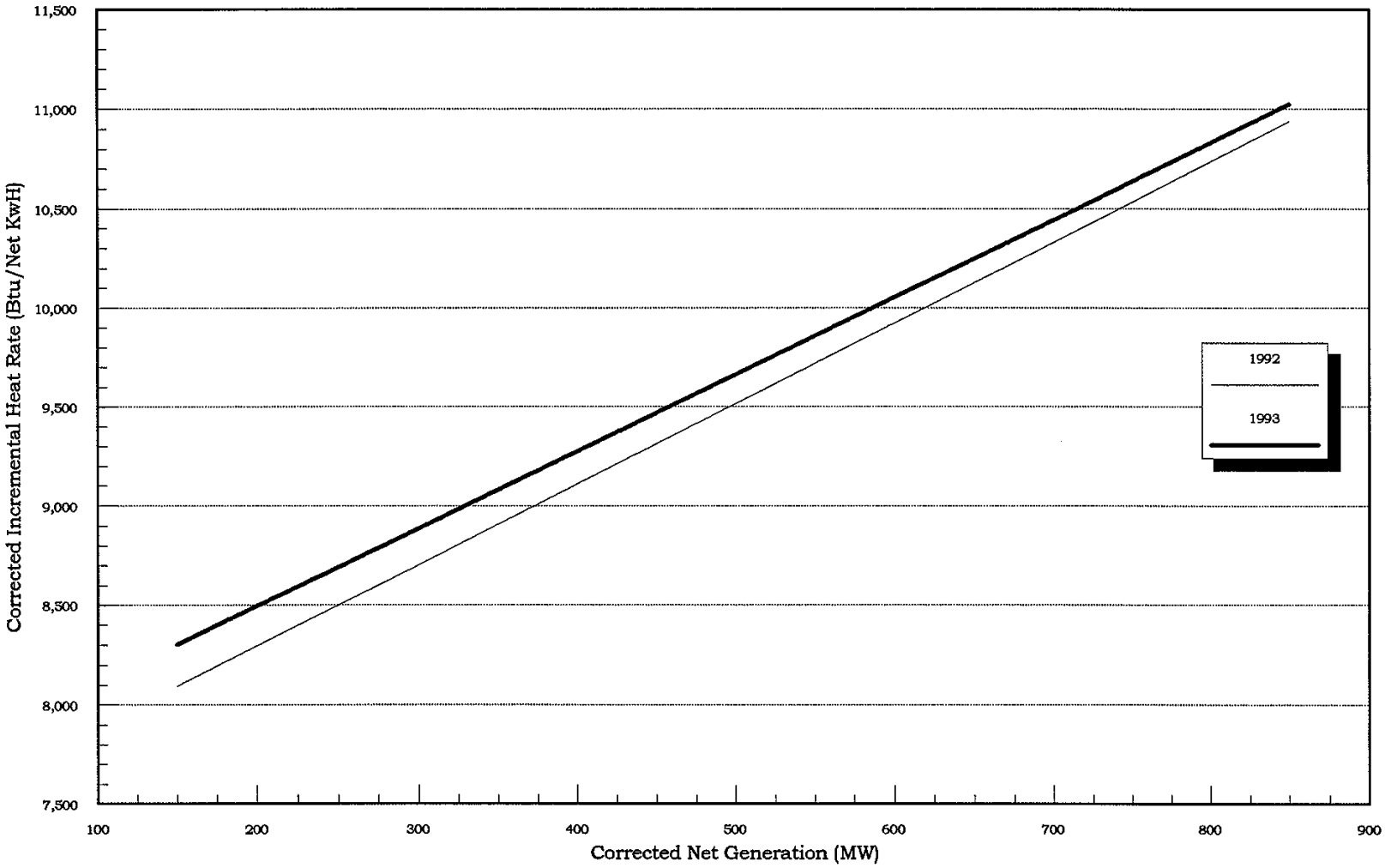
Confidential Business Information

ISES_00005532

Heat Rate Test Information

Independence SES Unit 1

(corrected to summer wet bulb)



Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

06-07-1993 13:55:53

Independence

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-160a.dta

THE AVERAGE GROSS GENERATION IS..... 199.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.19 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 81.39 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 73.77 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 64.52 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 66.62 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 88.63 PCT
THE AVERAGE COAL FLOW IS..... 274400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 0.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.62 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.19 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.13 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 82.72 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 1.57 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1209639.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -19.22 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -16.86 %
BPCHG = 2.93
KWCHG = -2.85
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.028456 %

THE CORRECTED GROSS GENERATION IS..... 193.49 MWe

THE CORRECTED NET GENERATION IS..... 163.89 MWe

THE UNCORRECTED NET HEAT RATE IS..... 0.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 0.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 0.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:56:06

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-160b.dta

THE AVERAGE GROSS GENERATION IS..... 190.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.12 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 79.50 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 72.55 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 56.33 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 61.33 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.42 PCT
THE AVERAGE COAL FLOW IS..... 2414.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 0.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 6.95 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 79.57 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.75 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 86.73 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 1.74 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1133022.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -20.23 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -16.14 %
BPCHG = 5.13
KWCHG = -4.88
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.048782 %

THE CORRECTED GROSS GENERATION IS..... 181.16 MWe

THE CORRECTED NET GENERATION IS..... 152.16 MWe

THE UNCORRECTED NET HEAT RATE IS..... 0.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 0.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 0.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:56:52

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-235a.dta

THE AVERAGE GROSS GENERATION IS..... 261.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.42 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 86.96 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 78.34 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 63.22 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 64.37 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 92.94 PCT
THE AVERAGE COAL FLOW IS..... 323000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8635.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.62 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 83.00 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.03 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 88.36 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 1.92 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1661214.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -14.02 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.63 %
BPCHG = 1.61
KWCHG = -1.59
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.015865 %

THE CORRECTED GROSS GENERATION IS..... 256.92 MWe

THE CORRECTED NET GENERATION IS..... 233.42 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11743.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11948.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2789.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:57:04

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-235b.dta

THE AVERAGE GROSS GENERATION IS..... 260.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.40 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 86.52 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 77.92 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 61.97 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 63.13 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 92.85 PCT
THE AVERAGE COAL FLOW IS..... 328000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8646.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.60 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 82.26 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.03 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 88.68 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 1.94 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1653534.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -14.46 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.58 %
BPCHG = 2.20
KWCHG = -2.15
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.021524 %

THE CORRECTED GROSS GENERATION IS..... 254.52 MWe

THE CORRECTED NET GENERATION IS..... 231.02 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11991.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12275.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2836.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:57:21

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-460a.dta

THE AVERAGE GROSS GENERATION IS..... 490.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.97 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 97.63 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.34 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 60.95 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 68.76 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 64.17 PCT
THE AVERAGE COAL FLOW IS..... 564300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8522.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 14.29 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.04 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.83 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.13 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.69 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3106827.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.46 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.73 %
BPCHG = 1.86
KWCHG = -1.83
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.018291 %

THE CORRECTED GROSS GENERATION IS..... 481.20 MWe

THE CORRECTED NET GENERATION IS..... 455.10 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10366.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10566.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4809.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:57:34

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-460b.dta

THE AVERAGE GROSS GENERATION IS..... 482.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.94 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 97.11 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.05 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 62.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.67 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 58.89 PCT
THE AVERAGE COAL FLOW IS..... 556200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8401.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 14.06 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.88 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.17 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.35 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.61 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3056871.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.66 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.04 %
BPCHG = 1.75
KWCHG = -1.72
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.017240 %

THE CORRECTED GROSS GENERATION IS..... 473.83 MWe

THE CORRECTED NET GENERATION IS..... 448.13 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10240.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10427.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4672.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:57:52

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-310a.dta

THE AVERAGE GROSS GENERATION IS..... 336.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.34 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 85.11 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 74.50 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 53.87 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 56.75 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 83.15 PCT
THE AVERAGE COAL FLOW IS..... 419200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8577.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.61 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 78.43 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.55 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 89.61 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.11 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2119757.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.94 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.12 %
BPCHG = -5.46
KWCHG = 5.77
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.942286 %

THE CORRECTED GROSS GENERATION IS..... 356.58 MWe

THE CORRECTED NET GENERATION IS..... 332.48 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11528.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10814.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3595.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:58:04

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-310b.dta

THE AVERAGE GROSS GENERATION IS..... 336.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.30 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 84.17 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 73.63 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 53.96 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 58.01 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.10 PCT
THE AVERAGE COAL FLOW IS..... 399400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8563.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.54 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 78.60 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.78 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 88.81 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.06 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2116784.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.54 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.37 %
BPCHG = -2.00
KWCHG = 2.04
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.979626 %

THE CORRECTED GROSS GENERATION IS..... 342.99 MWe

THE CORRECTED NET GENERATION IS..... 319.29 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10952.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10712.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3420.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:58:19

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-550a.dta

THE AVERAGE GROSS GENERATION IS..... 579.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.00 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.14 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 81.88 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 59.10 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 68.29 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 58.19 PCT
THE AVERAGE COAL FLOW IS..... 644700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8543.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 16.26 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 83.35 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.34 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.87 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.82 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3678675.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.94 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.45 %
BPCHG = 1.58
KWCHG = -1.55
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.015527 %

THE CORRECTED GROSS GENERATION IS..... 570.15 MWe

THE CORRECTED NET GENERATION IS..... 543.85 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9965.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10128.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5508.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:58:31

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-550b.dta

THE AVERAGE GROSS GENERATION IS..... 572.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.08 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.44 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.29 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 60.53 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.59 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 49.85 PCT
THE AVERAGE COAL FLOW IS..... 645300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8597.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 16.15 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 85.02 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.90 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.17 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.84 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3639014.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.90 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.47 %
BPCHG = 1.52
KWCHG = -1.50
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014964 %

THE CORRECTED GROSS GENERATION IS..... 563.57 MWe

THE CORRECTED NET GENERATION IS..... 537.37 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10164.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10324.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5547.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:58:50

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-625a.dta

THE AVERAGE GROSS GENERATION IS..... 650.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.43 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 104.09 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.79 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 63.44 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.90 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 53.53 PCT
THE AVERAGE COAL FLOW IS..... 703600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8762.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.30 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.21 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.75 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.33 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.18 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4174034.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.37 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.15 %
BPCHG = 1.28
KWCHG = -1.26
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012592 %

THE CORRECTED GROSS GENERATION IS..... 641.92 MWe

THE CORRECTED NET GENERATION IS..... 614.22 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9907.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10037.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6165.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:59:15

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-625b.dta

THE AVERAGE GROSS GENERATION IS..... 656.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.53 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.39 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.09 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 64.86 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.17 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 49.04 PCT
THE AVERAGE COAL FLOW IS..... 708200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8741.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.30 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.80 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.13 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.42 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.19 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4218863.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.17 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.07 %
BPCHG = 1.15
KWCHG = -1.14
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011377 %

THE CORRECTED GROSS GENERATION IS..... 648.62 MWe

THE CORRECTED NET GENERATION IS..... 620.42 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9861.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 9978.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6190.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 13:59:33

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-775a.dta

THE AVERAGE GROSS GENERATION IS..... 806.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.38 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.62 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.66 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.04 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 46.67 PCT
THE AVERAGE COAL FLOW IS..... 881500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8687.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 21.96 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.18 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.65 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.13 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.02 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5382553.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.74 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.84 %
BPCHG = 0.92
KWCHG = -0.91
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009084 %

THE CORRECTED GROSS GENERATION IS..... 798.74 MWe

THE CORRECTED NET GENERATION IS..... 767.34 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9886.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 9980.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7658.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

06-07-1993 14:00:20

HEAT RATE CORRECTIONS FOR UNIT TWO

MEASURED TEST INPUTS FROM FILE u2-775b.dta

THE AVERAGE GROSS GENERATION IS..... 810.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.47 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 113.48 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.43 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.30 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 84.42 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 46.68 PCT
THE AVERAGE COAL FLOW IS..... 881700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8563.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.05 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.89 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.65 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.19 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.05 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5420489.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.60 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.78 %
BPCHG = 0.84
KWCHG = -0.83
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008313 %

THE CORRECTED GROSS GENERATION IS..... 803.32 MWe

THE CORRECTED NET GENERATION IS..... 771.92 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9697.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 9781.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7550.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:25:22

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1160a

THE AVERAGE GROSS GENERATION IS..... 178.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.84 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 92.80 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.44 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.92 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 91.21 PCT
THE AVERAGE COAL FLOW IS..... 240700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8901.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 7.67 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.36 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.74 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.01 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 89.71 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.08 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1158205.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -15.34 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -13.62 %
BPCHG = 2.03
KWCHG = -1.99
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.019876 %

THE CORRECTED GROSS GENERATION IS..... 174.53 MWe

THE CORRECTED NET GENERATION IS..... 149.03 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14346.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14680.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2187.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:25:39

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1160b

THE AVERAGE GROSS GENERATION IS..... 179.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.80 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 92.04 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.71 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.99 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.96 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 90.19 PCT
THE AVERAGE COAL FLOW IS..... 242400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8890.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 7.67 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.33 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.25 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.05 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 89.51 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.07 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1159851.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -15.60 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -13.71 %
BPCHG = 2.24
KWCHG = -2.19
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.021934 %

THE CORRECTED GROSS GENERATION IS..... 175.16 MWe

THE CORRECTED NET GENERATION IS..... 149.56 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14344.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14712.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2200.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:25:57

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1235a

THE AVERAGE GROSS GENERATION IS..... 259.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.34 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.64 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.56 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.58 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.67 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 94.84 PCT
THE AVERAGE COAL FLOW IS..... 329800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8843.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.08 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.04 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.04 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 90.56 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.34 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1730182.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.19 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.19 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 259.00 MWe

THE CORRECTED NET GENERATION IS..... 233.60 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12485.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12485.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2916.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:26:09

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1235b

THE AVERAGE GROSS GENERATION IS..... 260.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.32 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.42 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.46 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.05 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 95.52 PCT
THE AVERAGE COAL FLOW IS..... 330500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8873.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.96 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.50 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.01 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 90.97 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.35 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1734836.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.26 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.07 %
BPCHG = 0.21
KWCHG = -0.21
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.002112 %

THE CORRECTED GROSS GENERATION IS..... 259.45 MWe

THE CORRECTED NET GENERATION IS..... 234.15 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12495.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12524.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2932.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:26:21

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1310a

THE AVERAGE GROSS GENERATION IS..... 338.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.65 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 104.05 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.74 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.94 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.34 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.94 PCT
THE AVERAGE COAL FLOW IS..... 406500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8902.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.31 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.17 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.54 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.11 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.67 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2243202.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.52 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.41 %
BPCHG = 0.13
KWCHG = -0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001272 %

THE CORRECTED GROSS GENERATION IS..... 337.57 MWe

THE CORRECTED NET GENERATION IS..... 311.47 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11602.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11618.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3618.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:26:32

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1310b

THE AVERAGE GROSS GENERATION IS..... 341.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.61 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.58 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.25 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.94 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.66 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 84.53 PCT
THE AVERAGE COAL FLOW IS..... 409400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8897.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.33 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.20 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.60 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.66 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.71 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2257420.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.67 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.22 %
BPCHG = 0.48
KWCHG = -0.48
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.004813 %

THE CORRECTED GROSS GENERATION IS..... 339.37 MWe

THE CORRECTED NET GENERATION IS..... 313.47 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11560.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11620.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3642.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:26:42

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1385a

THE AVERAGE GROSS GENERATION IS..... 410.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.43 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.50 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.94 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.33 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.55 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.24 PCT
THE AVERAGE COAL FLOW IS..... 472200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8792.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.56 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.93 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.49 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.51 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.76 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2657711.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.44 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.28 %
BPCHG = 1.25
KWCHG = -1.24
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012367 %

THE CORRECTED GROSS GENERATION IS..... 404.99 MWe

THE CORRECTED NET GENERATION IS..... 377.59 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10852.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10995.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4152.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:26:50

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1385b

THE AVERAGE GROSS GENERATION IS..... 410.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.49 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 101.55 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.93 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.04 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.87 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 83.39 PCT
THE AVERAGE COAL FLOW IS..... 473100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8805.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.62 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.37 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.73 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.29 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.74 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2662258.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.22 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.36 %
BPCHG = 0.93
KWCHG = -0.92
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009217 %

THE CORRECTED GROSS GENERATION IS..... 406.26 MWe

THE CORRECTED NET GENERATION IS..... 379.06 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10882.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10989.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4165.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:27:00

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1460a

THE AVERAGE GROSS GENERATION IS..... 479.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.89 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.19 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.69 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.75 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.13 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 93.39 PCT
THE AVERAGE COAL FLOW IS..... 544500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8826.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.50 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.98 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.45 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.17 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.00 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3111171.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.15 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.79 %
BPCHG = 0.38
KWCHG = -0.38
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.003759 %

THE CORRECTED GROSS GENERATION IS..... 477.21 MWe

THE CORRECTED NET GENERATION IS..... 450.51 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10626.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10668.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4806.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:27:06

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1460b

THE AVERAGE GROSS GENERATION IS..... 495.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.99 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.40 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.50 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.79 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.11 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.20 PCT
THE AVERAGE COAL FLOW IS..... 555700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8816.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.90 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.33 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.76 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.94 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.02 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3215946.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.71 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.60 %
BPCHG = 0.11
KWCHG = -0.11
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001110 %

THE CORRECTED GROSS GENERATION IS..... 494.45 MWe

THE CORRECTED NET GENERATION IS..... 467.55 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10466.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10478.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4899.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:27:15

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1550a

THE AVERAGE GROSS GENERATION IS..... 575.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.36 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.80 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.62 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.04 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.37 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.99 PCT
THE AVERAGE COAL FLOW IS..... 631300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8860.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.18 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.57 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.92 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.97 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.48 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3760561.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.09 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.77 %
BPCHG = 0.33
KWCHG = -0.33
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.003333 %

THE CORRECTED GROSS GENERATION IS..... 573.09 MWe

THE CORRECTED NET GENERATION IS..... 544.49 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10237.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10273.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5593.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:27:24

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1550b

THE AVERAGE GROSS GENERATION IS..... 577.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.42 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 111.61 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.31 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.75 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.95 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 79.76 PCT
THE AVERAGE COAL FLOW IS..... 635300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8854.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.30 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.18 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.18 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.31 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.42 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3778401.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.91 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.91 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 577.00 MWe

THE CORRECTED NET GENERATION IS..... 548.20 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10261.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10261.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5625.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:47:53

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1625a

THE AVERAGE GROSS GENERATION IS..... 652.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.57 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.32 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.32 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.31 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 69.45 PCT
THE AVERAGE COAL FLOW IS..... 710800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8811.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.50 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.33 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.86 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.35 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.82 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4275914.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.21 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.63 %
BPCHG = 0.59
KWCHG = -0.59
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005884 %

THE CORRECTED GROSS GENERATION IS..... 648.19 MWe

THE CORRECTED NET GENERATION IS..... 618.19 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10069.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10131.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6263.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:48:05

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1625b

THE AVERAGE GROSS GENERATION IS..... 646.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.65 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 113.22 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.79 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.90 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 86.39 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 59.12 PCT
THE AVERAGE COAL FLOW IS..... 708800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8823.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.43 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.58 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.50 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.72 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.84 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4243724.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.04 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.59 %
BPCHG = 0.46
KWCHG = -0.45
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.004532 %

THE CORRECTED GROSS GENERATION IS..... 643.09 MWe

THE CORRECTED NET GENERATION IS..... 612.89 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10155.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10204.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6254.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:48:14

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1690a

THE AVERAGE GROSS GENERATION IS..... 727.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 33.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.16 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 117.58 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.43 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.29 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 88.40 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 61.08 PCT
THE AVERAGE COAL FLOW IS..... 801700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8851.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 23.15 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.01 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.95 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.22 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4844645.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.68 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.56 %
BPCHG = 0.12
KWCHG = -0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001230 %

THE CORRECTED GROSS GENERATION IS..... 726.11 MWe

THE CORRECTED NET GENERATION IS..... 692.41 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10235.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10248.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7096.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:48:25

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1690b

THE AVERAGE GROSS GENERATION IS..... 722.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 34.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.17 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 117.79 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.73 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 87.15 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 66.18 PCT
THE AVERAGE COAL FLOW IS..... 798100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8859.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.97 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.21 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.21 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.82 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.16 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4810862.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.68 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.68 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 722.00 MWe

THE CORRECTED NET GENERATION IS..... 687.90 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10278.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10278.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7070.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:28:00

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1775a

THE AVERAGE GROSS GENERATION IS..... 810.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 35.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.52 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.85 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.35 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.73 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 86.24 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 65.58 PCT
THE AVERAGE COAL FLOW IS..... 892300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8848.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.50 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.78 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.39 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.97 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.59 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5522737.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.04 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.17 %
BPCHG = 0.13
KWCHG = -0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001327 %

THE CORRECTED GROSS GENERATION IS..... 808.93 MWe

THE CORRECTED NET GENERATION IS..... 773.13 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10198.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10212.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7895.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:28:13

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1775b

THE AVERAGE GROSS GENERATION IS..... 808.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 36.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.61 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 120.69 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.99 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.65 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 88.28 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 59.38 PCT
THE AVERAGE COAL FLOW IS..... 894000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8860.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.70 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.15 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.78 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.62 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.68 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5517638.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.19 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.32 %
BPCHG = 0.14
KWCHG = -0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001349 %

THE CORRECTED GROSS GENERATION IS..... 806.91 MWe

THE CORRECTED NET GENERATION IS..... 770.61 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10264.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10278.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7920.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:28:32

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1836a

THE AVERAGE GROSS GENERATION IS..... 864.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.13 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 124.04 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.28 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.78 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 86.05 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.17 PCT
THE AVERAGE COAL FLOW IS..... 952300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8829.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.76 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.64 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.08 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.72 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.05 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5985824.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 1.01 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.89 %
BPCHG = -0.12
KWCHG = 0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998820 %

THE CORRECTED GROSS GENERATION IS..... 865.02 MWe

THE CORRECTED NET GENERATION IS..... 827.42 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10174.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10162.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8408.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-27-1994 14:28:48

HEAT RATE CORRECTIONS
Independence Plant - Unit One

MEASURED TEST INPUTS FROM FILE 1836b

THE AVERAGE GROSS GENERATION IS..... 863.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.04 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 123.24 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.63 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.51 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 84.50 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.71 PCT
THE AVERAGE COAL FLOW IS..... 949000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8827.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.61 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.04 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.04 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.63 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.04 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5968708.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.88 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.88 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 863.00 MWe

THE CORRECTED NET GENERATION IS..... 825.80 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10144.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10144.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8377.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Date: September 14, 1994

To:

Mr. Glenn Phillips	T-EP-16
Mr. Etienne Senac	A-ISES
Mr. Art Gilreath	T-EP-16
Mr. William Phillips	A-SOC
Mr. Alan Hardy	A-TCBY-16

From: Pat Klepper

Subject: **1994 Independence Plant - Heat Rate Test Results**

Heat rate testing was performed on Independence Unit 1 from July 18 through July 22, and on Unit from August 8 through August 12. Co-owners were notified prior to the tests and David Harris of Arkansas Electric Co-operative was present and participated in the testing. Due to an unacceptable variation in the Unit 2 full load test results, a second full load test on this unit was performed on September 8. Testing was performed in an unbiased manner. Unit 1 was operating with one high pressure heater train out of service due to heater tube leaks. This is *normal* operation for this unit and will be until the failed feedwater heater is replaced.

My calculations, analysis, and review are now complete and are attached for reference. I recommend that these results be implemented for dispatch and co-owner billing. The new coefficients for the heat rate equations are;

Unit One

$$X^2 = 1.77596601405313E-0003$$
$$X^1 = 7.40529855307445E+0000$$
$$X^0 = 1.08497832922833E+0003$$

Unit Two

$$X^2 = 1.70306418321946E-0003$$
$$X^1 = 7.59917156354755E+0000$$
$$X^0 = 9.84838182763744E+0002$$

If you need any additional information, please do not hesitate to contact me.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

WPK/

Attachments

cc: Henry Jones
David Harris

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:18:26

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2160A

THE AVERAGE GROSS GENERATION IS..... 192.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.80 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 94.56 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.84 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.31 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.30 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.99 PCT
THE AVERAGE COAL FLOW IS..... 258700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8696.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 8.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.72 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.37 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.09 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.55 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.13 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1245368.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -15.20 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.97 %
BPCHG = 2.64
KWCHG = -2.57
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.025726 %

THE CORRECTED GROSS GENERATION IS..... 187.18 MWe

THE CORRECTED NET GENERATION IS..... 163.38 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13657.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14060.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2297.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:18:45

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2160B

THE AVERAGE GROSS GENERATION IS..... 192.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.76 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 93.90 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.18 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.92 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.78 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.38 PCT
THE AVERAGE COAL FLOW IS..... 259200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8699.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 8.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.72 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.59 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.23 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.82 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.08 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1241360.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -15.45 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -13.31 %
BPCHG = 2.53
KWCHG = -2.47
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.024660 %

THE CORRECTED GROSS GENERATION IS..... 187.38 MWe

THE CORRECTED NET GENERATION IS..... 163.18 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13720.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14109.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2302.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:19:07

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2235A

THE AVERAGE GROSS GENERATION IS..... 266.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.87 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.47 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.89 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.97 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.97 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 98.63 PCT
THE AVERAGE COAL FLOW IS..... 320700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8682.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 3.60 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.58 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.54 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.86 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 90.21 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.12 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1730672.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -12.62 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -11.33 %
BPCHG = 1.48
KWCHG = -1.46
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014594 %

THE CORRECTED GROSS GENERATION IS..... 262.17 MWe

THE CORRECTED NET GENERATION IS..... 237.77 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11613.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11800.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2805.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:19:20

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2235B

THE AVERAGE GROSS GENERATION IS..... 266.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.84 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.04 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.48 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.75 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.75 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 98.62 PCT
THE AVERAGE COAL FLOW IS..... 317800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8674.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 3.60 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.56 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.54 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.86 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 89.80 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.09 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1728467.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -12.78 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -11.52 %
BPCHG = 1.44
KWCHG = -1.42
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014234 %

THE CORRECTED GROSS GENERATION IS..... 262.27 MWe

THE CORRECTED NET GENERATION IS..... 237.77 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11503.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11684.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2778.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:19:38

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2310A

THE AVERAGE GROSS GENERATION IS..... 340.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.03 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 97.65 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.25 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.81 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.29 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 96.46 PCT
THE AVERAGE COAL FLOW IS..... 405600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8776.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.40 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.31 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.06 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.00 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.32 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2195897.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.23 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.00 %
BPCHG = 1.37
KWCHG = -1.35
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013470 %

THE CORRECTED GROSS GENERATION IS..... 335.48 MWe

THE CORRECTED NET GENERATION IS..... 310.78 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11290.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11454.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3559.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:19:48

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2310B

THE AVERAGE GROSS GENERATION IS..... 341.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.05 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 97.94 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.51 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.29 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.29 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 98.59 PCT
THE AVERAGE COAL FLOW IS..... 405200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8817.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.43 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.20 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 92.98 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.29 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.35 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2204460.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.10 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -8.85 %
BPCHG = 1.39
KWCHG = -1.37
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013696 %

THE CORRECTED GROSS GENERATION IS..... 336.39 MWe

THE CORRECTED NET GENERATION IS..... 311.29 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11310.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11477.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3572.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:20:02

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2385A

THE AVERAGE GROSS GENERATION IS..... 406.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.21 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.40 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.96 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.32 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.32 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 98.59 PCT
THE AVERAGE COAL FLOW IS..... 471700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8718.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.44 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.42 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.11 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.65 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.52 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2616167.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.29 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.22 %
BPCHG = 1.17
KWCHG = -1.15
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011544 %

THE CORRECTED GROSS GENERATION IS..... 401.37 MWe

THE CORRECTED NET GENERATION IS..... 375.97 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10805.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10938.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4112.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:20:14

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2385B

THE AVERAGE GROSS GENERATION IS..... 405.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.25 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.68 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.46 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.65 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.49 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 95.12 PCT
THE AVERAGE COAL FLOW IS..... 472800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8705.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.22 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.69 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.24 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.01 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.49 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2613611.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.16 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.34 %
BPCHG = 0.90
KWCHG = -0.89
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008925 %

THE CORRECTED GROSS GENERATION IS..... 401.42 MWe

THE CORRECTED NET GENERATION IS..... 375.82 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10848.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10952.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4116.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:20:29

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2460A

THE AVERAGE GROSS GENERATION IS..... 496.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.65 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.60 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.86 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.03 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.03 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 98.64 PCT
THE AVERAGE COAL FLOW IS..... 557700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8734.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.74 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.22 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.26 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.89 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.96 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3191626.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.71 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.81 %
BPCHG = 0.95
KWCHG = -0.94
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009399 %

THE CORRECTED GROSS GENERATION IS..... 491.38 MWe

THE CORRECTED NET GENERATION IS..... 464.18 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10391.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10494.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4871.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:20:40

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2460B

THE AVERAGE GROSS GENERATION IS..... 487.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.63 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.42 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.66 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.17 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.17 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 98.65 PCT
THE AVERAGE COAL FLOW IS..... 557600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8720.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.76 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.22 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.26 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.69 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.94 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3136635.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.85 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.93 %
BPCHG = 0.97
KWCHG = -0.96
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009608 %

THE CORRECTED GROSS GENERATION IS..... 482.37 MWe

THE CORRECTED NET GENERATION IS..... 455.77 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10562.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10669.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4862.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:20:56

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2550A

THE AVERAGE GROSS GENERATION IS..... 582.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.85 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.95 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.68 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.29 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.47 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.55 PCT
THE AVERAGE COAL FLOW IS..... 650000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8732.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.27 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.03 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.22 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.87 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.11 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3759576.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.27 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.69 %
BPCHG = 0.61
KWCHG = -0.60
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006036 %

THE CORRECTED GROSS GENERATION IS..... 578.51 MWe

THE CORRECTED NET GENERATION IS..... 549.91 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10256.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10321.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5675.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:21:05

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2550B

THE AVERAGE GROSS GENERATION IS..... 583.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.95 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 109.12 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.75 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.52 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.02 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 67.91 PCT
THE AVERAGE COAL FLOW IS..... 645600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8776.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.85 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.83 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.73 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.11 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3773575.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.05 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.68 %
BPCHG = 0.38
KWCHG = -0.38
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.003835 %

THE CORRECTED GROSS GENERATION IS..... 580.77 MWe

THE CORRECTED NET GENERATION IS..... 553.47 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10196.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10237.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5666.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:21:41

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2625A

THE AVERAGE GROSS GENERATION IS..... 656.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.43 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 113.80 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.20 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.18 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 86.28 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 70.37 PCT
THE AVERAGE COAL FLOW IS..... 714900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8848.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.60 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.81 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.81 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.20 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.43 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4289618.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.50 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.50 %
BPCHG = -0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 656.00 MWe

THE CORRECTED NET GENERATION IS..... 625.70 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10109.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10109.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6325.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:21:57

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2625B

THE AVERAGE GROSS GENERATION IS..... 648.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.53 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 114.75 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.09 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 79.40 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 89.44 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 64.87 PCT
THE AVERAGE COAL FLOW IS..... 715200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8832.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.66 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.67 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.16 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.58 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.48 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4247167.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.31 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.42 %
BPCHG = -0.12
KWCHG = 0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998839 %

THE CORRECTED GROSS GENERATION IS..... 648.75 MWe

THE CORRECTED NET GENERATION IS..... 618.35 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10228.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10216.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6317.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:22:08

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2690A

THE AVERAGE GROSS GENERATION IS..... 737.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.74 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 116.81 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.73 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.09 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 84.16 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.33 PCT
THE AVERAGE COAL FLOW IS..... 818000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8743.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 23.08 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.24 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.78 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.27 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.79 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4871329.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.51 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.41 %
BPCHG = 0.11
KWCHG = -0.11
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001051 %

THE CORRECTED GROSS GENERATION IS..... 736.23 MWe

THE CORRECTED NET GENERATION IS..... 704.53 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10140.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10151.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7152.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:22:17

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2690B

THE AVERAGE GROSS GENERATION IS..... 741.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.80 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 117.08 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.70 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.92 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 86.77 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 61.34 PCT
THE AVERAGE COAL FLOW IS..... 823900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8799.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 23.38 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.29 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.94 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.92 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4905622.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.39 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.15 %
BPCHG = 0.24
KWCHG = -0.24
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.002396 %

THE CORRECTED GROSS GENERATION IS..... 739.23 MWe

THE CORRECTED NET GENERATION IS..... 706.73 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10232.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10258.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7250.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:22:35

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2775A

THE AVERAGE GROSS GENERATION IS..... 822.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 36.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.33 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 121.14 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.88 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.69 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 92.91 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 50.18 PCT
THE AVERAGE COAL FLOW IS..... 909300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8832.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.26 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.35 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.35 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.88 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.33 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5590274.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.29 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.29 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 822.00 MWe

THE CORRECTED NET GENERATION IS..... 785.30 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10227.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10227.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8031.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:22:46

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2775B

THE AVERAGE GROSS GENERATION IS..... 823.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 36.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.37 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 121.40 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.05 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.82 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 92.83 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 50.77 PCT
THE AVERAGE COAL FLOW IS..... 911800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8842.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.35 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.32 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.32 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.05 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.37 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5601619.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.23 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.23 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 823.00 MWe

THE CORRECTED NET GENERATION IS..... 786.50 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10251.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10251.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8062.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:22:57

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2842A

THE AVERAGE GROSS GENERATION IS..... 885.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.64 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 123.49 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.51 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.78 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 93.56 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 51.71 PCT
THE AVERAGE COAL FLOW IS..... 980200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8692.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 9522000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.98 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 97.03 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.34 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.82 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.55 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6086549.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.21 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.08 %
BPCHG = -0.13
KWCHG = 0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998681 %

THE CORRECTED GROSS GENERATION IS..... 886.17 MWe

THE CORRECTED NET GENERATION IS..... 847.87 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10063.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10049.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8520.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-19-1994 10:23:11

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2842B

THE AVERAGE GROSS GENERATION IS..... 876.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.69 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 123.81 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.85 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 79.33 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 93.69 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 52.99 PCT
THE AVERAGE COAL FLOW IS..... 978300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8910.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 9522000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.96 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.95 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.27 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.17 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.60 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6024870.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.30 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.16 %
BPCHG = -0.13
KWCHG = 0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998680 %

THE CORRECTED GROSS GENERATION IS..... 877.16 MWe

THE CORRECTED NET GENERATION IS..... 838.66 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10408.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10394.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8717.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

09-12-1994 09:57:40

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2842aa

THE AVERAGE GROSS GENERATION IS..... 878.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 35.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.91 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 117.03 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.52 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 67.75 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.70 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 43.71 PCT
THE AVERAGE COAL FLOW IS..... 954100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8882.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.51 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.97 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 97.25 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.80 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.60 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5970278.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.82 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.17 %
BPCHG = 1.00
KWCHG = -0.99
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009891 %

THE CORRECTED GROSS GENERATION IS..... 869.40 MWe

THE CORRECTED NET GENERATION IS..... 833.70 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10061.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10165.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8475.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

09-12-1994 09:58:01

HEAT RATE CORRECTIONS
Independence Plant - Unit Two

MEASURED TEST INPUTS FROM FILE 2842ba

THE AVERAGE GROSS GENERATION IS..... 878.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.95 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 117.56 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.01 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.42 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 84.73 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 43.17 PCT
THE AVERAGE COAL FLOW IS..... 955300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8881.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5922000.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.55 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.03 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 97.32 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.31 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.65 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5973874.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.77 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.25 %
BPCHG = 1.03
KWCHG = -1.02
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010209 %

THE CORRECTED GROSS GENERATION IS..... 869.13 MWe

THE CORRECTED NET GENERATION IS..... 831.93 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10091.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10198.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8484.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence Plant - Unit One
Heat Rate Test Inputs
1995

Test Load	160	160	250	250	350	350	450	450	550	550	650	650	750	750	836	836
Test Date	7/24/95	7/24/95	7/25/95	7/25/95	7/26/95	7/26/95	7/24/95	7/24/95	7/25/95	7/25/95	7/27/95	7/27/95	7/26/95	7/26/95	7/27/95	7/27/95
Start Time	200	300	200	300	200	300	700	800	700	800	700	800	1000	1100	1300	1400
End Time	300	400	300	400	300	400	800	900	800	900	800	900	1100	1200	1400	1500
Data File Name	1160a	1160b	1250a	1250b	1350a	1350b	1450a	1450b	1550a	1550b	1650a	1650b	1750a	1750b	1836a	1836b
Gross Generation (MW)	193	192	282	285	377	371	481	493	586	585	687	685	794	793	852	842
Aux Usage (MW)	26.1	25.5	26.4	26.5	27.2	26.7	28.4	28.1	31	30.7	32.1	32.4	36.9	37.7	39.5	39.4
Back Pressure (InHg)	1.91	1.93	2.26	2.21	2.47	2.44	2.77	2.80	3.12	3.14	3.60	3.71	3.93	4.02	5.05	5.10
Hot Water Temp (DEGF)	92.88	93.13	98.15	97.36	100.55	100.12	103.73	104.51	106.92	108.01	111.37	112.51	113.67	114.53	122.70	123.21
Cold Water Temp (DEGF)	85.07	85.24	87.82	87.03	88.17	87.81	88.61	89.25	88.59	88.90	90.56	91.50	89.48	90.16	95.95	96.74
Wet Bulb Temperature (DEGF)	71.76	71.73	70.92	70.71	69.40	69.41	71.89	72.36	70.16	70.84	72.05	73.06	70.42	71.37	78.68	78.74
Dry Bulb Temperature (DEGF)	73.76	73.58	77.19	76.00	76.40	76.31	73.97	74.93	74.33	77.15	75.46	78.64	79.23	80.51	92.85	93.17
Coal Flow (PPH)	260700	261800	351000	352600	446400	445900	558300	563000	679900	680600	778200	779300	902000	902900	975700	966800
Coal Heating Value (BTU/#)	8646.8	8758.9	8645.9	8660.5	8798.3	8769.6	8687.1	8668.2	8697.2	8700.3			8708.1	8693.6		
Oil Flow (BBL/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil Heating Value (BTU/BBL)	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1160a

THE AVERAGE GROSS GENERATION IS..... 193.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.91 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 92.88 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.07 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.76 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.76 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 90.21 PCT
THE AVERAGE COAL FLOW IS..... 260700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8646.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.81 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.85 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.08 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 89.30 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.16 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1265042.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -14.38 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.66 %
BPCHG = 2.01
KWCHG = -1.97
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.019692 %

THE CORRECTED GROSS GENERATION IS..... 189.27 MWe

THE CORRECTED NET GENERATION IS..... 163.17 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13506.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13814.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2254.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005593

HEAT RATE CORRECTIONS
Independence - Unit ~~Two~~ ONE

MEASURED TEST INPUTS FROM FILE 1160b

THE AVERAGE GROSS GENERATION IS..... 192.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.93 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 93.13 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.24 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.73 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.58 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 90.81 PCT
THE AVERAGE COAL FLOW IS..... 261800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8758.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.89 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.82 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.06 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 89.48 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.18 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1260827.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -14.27 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.51 %
BPCHG = 2.05
KWCHG = -2.01
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.020102 %

THE CORRECTED GROSS GENERATION IS..... 188.22 MWe

THE CORRECTED NET GENERATION IS..... 162.72 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13772.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14092.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2293.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005594

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1250a

THE AVERAGE GROSS GENERATION IS..... 282.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.26 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.15 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.92 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.19 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.95 PCT
THE AVERAGE COAL FLOW IS..... 351000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8645.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.33 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.48 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.93 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.26 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.56 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1863676.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.23 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -8.68 %
BPCHG = 1.72
KWCHG = -1.69
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.016897 %

THE CORRECTED GROSS GENERATION IS..... 277.31 MWe

THE CORRECTED NET GENERATION IS..... 250.91 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11872.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12094.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3034.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005595

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1250b

THE AVERAGE GROSS GENERATION IS..... 285.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.21 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 97.36 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.03 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.71 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.00 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.35 PCT
THE AVERAGE COAL FLOW IS..... 352600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8660.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.33 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.28 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.76 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.51 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.51 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1877148.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.43 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -8.92 %
BPCHG = 1.69
KWCHG = -1.66
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.016644 %

THE CORRECTED GROSS GENERATION IS..... 280.33 MWe

THE CORRECTED NET GENERATION IS..... 253.83 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11813.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12030.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3053.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005596

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1350a

THE AVERAGE GROSS GENERATION IS..... 377.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.47 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.55 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.17 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.40 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.40 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 70.86 PCT
THE AVERAGE COAL FLOW IS..... 446400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8798.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.38 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.44 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.27 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.00 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.91 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2461656.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.76 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.07 %
BPCHG = 1.83
KWCHG = -1.80
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.017984 %

THE CORRECTED GROSS GENERATION IS..... 370.34 MWe

THE CORRECTED NET GENERATION IS..... 343.14 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11228.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11446.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3927.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005597

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1350b

THE AVERAGE GROSS GENERATION IS..... 371.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.44 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.12 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.81 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.41 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.31 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 71.21 PCT
THE AVERAGE COAL FLOW IS..... 445900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8769.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.31 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.41 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.24 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.64 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.87 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2422872.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.96 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.27 %
BPCHG = 1.84
KWCHG = -1.81
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.018095 %

THE CORRECTED GROSS GENERATION IS..... 364.41 MWe

THE CORRECTED NET GENERATION IS..... 337.71 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11357.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11579.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3910.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005598

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1450a

THE AVERAGE GROSS GENERATION IS..... 481.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.77 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.73 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.61 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.89 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.97 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.91 PCT
THE AVERAGE COAL FLOW IS..... 558300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8687.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.12 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.60 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.57 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.58 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.09 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3112123.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.49 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.53 %
BPCHG = 1.02
KWCHG = -1.01
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010136 %

THE CORRECTED GROSS GENERATION IS..... 476.17 MWe

THE CORRECTED NET GENERATION IS..... 447.77 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10715.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10831.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4850.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005599

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1450b

THE AVERAGE GROSS GENERATION IS..... 493.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.80 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 104.51 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.25 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.36 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.93 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 88.05 PCT
THE AVERAGE COAL FLOW IS..... 563000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8668.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.26 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.70 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.65 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.20 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.12 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3186419.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.28 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.34 %
BPCHG = 1.00
KWCHG = -0.99
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009869 %

THE CORRECTED GROSS GENERATION IS..... 488.18 MWe

THE CORRECTED NET GENERATION IS..... 460.08 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10497.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10607.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4880.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005600

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1550a

THE AVERAGE GROSS GENERATION IS..... 586.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.12 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.92 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.59 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.16 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.33 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 81.33 PCT
THE AVERAGE COAL FLOW IS..... 679900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8697.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.33 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.01 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.12 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.70 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.58 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3809487.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.61 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.46 %
BPCHG = 1.19
KWCHG = -1.18
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011763 %

THE CORRECTED GROSS GENERATION IS..... 579.19 MWe

THE CORRECTED NET GENERATION IS..... 548.19 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10654.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10786.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5913.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005601

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1550b

THE AVERAGE GROSS GENERATION IS..... 585.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.14 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 108.01 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.90 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.84 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.15 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.78 PCT
THE AVERAGE COAL FLOW IS..... 680600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8700.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.11 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.20 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.50 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.20 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.52 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3805127.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.57 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.62 %
BPCHG = 0.99
KWCHG = -0.98
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009793 %

THE CORRECTED GROSS GENERATION IS..... 579.33 MWe

THE CORRECTED NET GENERATION IS..... 548.63 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10682.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10793.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5921.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005602

HEAT RATE CORRECTIONS
Independence-Unit One

MEASURED TEST INPUTS FROM FILE 1650A

THE AVERAGE GROSS GENERATION IS..... 687.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.60 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 111.37 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.56 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.05 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.46 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 84.72 PCT
THE AVERAGE COAL FLOW IS..... 778200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8744.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.81 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.39 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.14 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.31 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.97 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4513913.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.98 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.19 %
BPCHG = 0.81
KWCHG = -0.80
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008000 %

THE CORRECTED GROSS GENERATION IS..... 681.55 MWe

THE CORRECTED NET GENERATION IS..... 649.45 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10390.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10477.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6804.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

HEAT RATE CORRECTIONS
Independence-Unit One

MEASURED TEST INPUTS FROM FILE 1650B

THE AVERAGE GROSS GENERATION IS..... 685.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.71 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.51 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.50 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.06 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.64 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.08 PCT
THE AVERAGE COAL FLOW IS..... 779300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8741.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 21.01 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.33 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.46 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.63 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.02 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4510084.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.75 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.08 %
BPCHG = 0.68
KWCHG = -0.68
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006772 %

THE CORRECTED GROSS GENERATION IS..... 680.39 MWe

THE CORRECTED NET GENERATION IS..... 647.99 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10438.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10513.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6812.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005604

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1750a

THE AVERAGE GROSS GENERATION IS..... 794.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 36.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.93 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 113.67 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.48 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.42 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.23 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 65.32 PCT
THE AVERAGE COAL FLOW IS..... 902000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8708.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 24.19 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.40 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.33 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.41 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.46 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5337966.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.99 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.07 %
BPCHG = 0.93
KWCHG = -0.92
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009182 %

THE CORRECTED GROSS GENERATION IS..... 786.78 MWe

THE CORRECTED NET GENERATION IS..... 749.88 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10374.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10474.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7854.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005605

HEAT RATE CORRECTIONS
Independence - Unit One

MEASURED TEST INPUTS FROM FILE 1750b

THE AVERAGE GROSS GENERATION IS..... 793.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.02 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 114.53 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.16 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.37 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.51 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 64.68 PCT
THE AVERAGE COAL FLOW IS..... 902900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8693.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 24.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.11 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.38 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.43 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.49 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5339097.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.85 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.03 %
BPCHG = 0.83
KWCHG = -0.82
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008203 %

THE CORRECTED GROSS GENERATION IS..... 786.55 MWe

THE CORRECTED NET GENERATION IS..... 748.85 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10392.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10482.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7849.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005606

HEAT RATE CORRECTIONS
Independence-Unit One

MEASURED TEST INPUTS FROM FILE 1836A

THE AVERAGE GROSS GENERATION IS..... 852.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.05 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 122.70 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.95 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.68 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 92.85 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 53.24 PCT
THE AVERAGE COAL FLOW IS..... 975700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8804.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.75 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.84 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.19 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.31 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.97 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5888299.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.91 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.78 %
BPCHG = -0.13
KWCHG = 0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998654 %

THE CORRECTED GROSS GENERATION IS..... 853.15 MWe

THE CORRECTED NET GENERATION IS..... 813.65 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10573.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10558.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8590.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005607

HEAT RATE CORRECTIONS
Independence-Unit One

MEASURED TEST INPUTS FROM FILE 1836B

THE AVERAGE GROSS GENERATION IS..... 842.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.10 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 123.21 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.74 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.74 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 93.17 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 52.59 PCT
THE AVERAGE COAL FLOW IS..... 966800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8732.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.47 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.86 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.22 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.10 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.02 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5819463.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 1.01 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.87 %
BPCHG = -0.14
KWCHG = 0.14
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998593 %

THE CORRECTED GROSS GENERATION IS..... 843.19 MWe

THE CORRECTED NET GENERATION IS..... 803.79 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10519.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10503.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8442.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005608

Date: August 10, 1995

To:

Jim Campbell	T-EP-16
Mike Bakewell	T-EP-16
Mike Kolbus	A-ISES
William Phillips	A-SOC
Henry Thompson	A-TCBY-23G

From: Pat Klepper
Roger Lawson

Subject: **1995 Independence Plant - Heat Rate Test Results**

A series of heat rate tests were performed on both Independence units from July 10, through July 27. The co-owners were notified as required by contract and representatives from AECC observed the tests. The tests and analysis meet the requirements of the Entergy heat rate test procedure. Unit 1 was restricted 20 to 30 MW's due to back pressure on the full load test.

The analysis of the test data resulted in the following coefficients for the second order heat rate curves.

Unit One

X^2	=	**1.413E-0003**
X^1	=	**8.259E+0000**
X^0	=	**8.916E+0003**

Unit Two

X^2	=	**2.059E-0003**
X^1	=	**7.349E+0000**
X^0	=	**1.060E+0003**

A set of curves is attached showing the different heat rate curves and comparison curves.

It is our recommendation that these heat rate curves be implemented for economic dispatch and co-owner billing. Additional informantion can be obtained from Pat Klepper at 8-762-4529 or Roger Lawson at 8-764-7329.

Attachments

cc:

George Eubanks	A-WB-SC
Roger Dupre	A-ISES
Phil Carter	A-SOC
David Harris	AECC

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2160a

THE AVERAGE GROSS GENERATION IS..... 179.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.96 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 96.55 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.95 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.40 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.73 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.75 PCT
THE AVERAGE COAL FLOW IS..... 252800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8774.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.60 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.58 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.57 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.94 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.20 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1180095.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -14.40 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.61 %
BPCHG = 2.09
KWCHG = -2.05
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.020473 %

THE CORRECTED GROSS GENERATION IS..... 175.41 MWe

THE CORRECTED NET GENERATION IS..... 152.21 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14237.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14573.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2218.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005610

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2160b

THE AVERAGE GROSS GENERATION IS..... 183.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.92 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.85 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.28 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.21 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.86 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 80.14 PCT
THE AVERAGE COAL FLOW IS..... 253900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8788.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.57 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.43 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.47 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.32 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.16 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1200585.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -14.62 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.89 %
BPCHG = 2.02
KWCHG = -1.98
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.019779 %

THE CORRECTED GROSS GENERATION IS..... 179.45 MWe

THE CORRECTED NET GENERATION IS..... 155.25 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14051.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14372.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2231.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005611

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2250a

THE AVERAGE GROSS GENERATION IS..... 276.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.12 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.04 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.01 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.66 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.50 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.72 PCT
THE AVERAGE COAL FLOW IS..... 344300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8865.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.03 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.95 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.59 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.42 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1813218.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.08 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.53 %
BPCHG = 1.75
KWCHG = -1.72
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.017220 %

THE CORRECTED GROSS GENERATION IS..... 271.33 MWe

THE CORRECTED NET GENERATION IS..... 246.63 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12146.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12376.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3052.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005612

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2250b

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THE AVERAGE GROSS GENERATION IS........................ 276.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 25.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 2.06 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS.........................................  97.96 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  88.01 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............ 69.78 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............ 73.26 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  83.89 PCT
THE AVERAGE COAL FLOW IS..........................  342200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8865.30 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
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CALCULATED RESULTS

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THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................  9.95 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..................  87.98 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..........  93.47 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS.......................................  93.50 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................. 2.41 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 1806849.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS...................................... -11.44 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..........................................  -9.59 %
BPCHG =    2.08
KWCHG =    -2.04
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.020378 %

THE CORRECTED GROSS GENERATION IS...................... 270.49 MWe

THE CORRECTED NET GENERATION IS........................ 244.89 MWe

THE UNCORRECTED NET HEAT RATE IS..................... 12115.4  BTU/NKW

THE CORRECTED NET HEAT RATE IS....................... 12388.1  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  3033.7  MMBTU
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Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005613

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2350a

THE AVERAGE GROSS GENERATION IS..... 380.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.57 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.20 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.73 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.75 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.09 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.88 PCT
THE AVERAGE COAL FLOW IS..... 435700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8828.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.47 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.13 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.56 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.16 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.68 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2489017.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.32 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.91 %
BPCHG = 0.44
KWCHG = -0.44
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.004372 %

THE CORRECTED GROSS GENERATION IS..... 378.35 MWe

THE CORRECTED NET GENERATION IS..... 352.75 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10853.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10904.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3846.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005614

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2350b

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THE AVERAGE GROSS GENERATION IS........................ 381.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 24.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 2.55 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS........................................... 105.02 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  92.40 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 75.56 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 78.62 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  86.88 PCT
THE AVERAGE COAL FLOW IS..........................  440900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8777.40 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 12.62 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  92.09 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  93.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  93.84 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 2.66 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 2493114.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -7.38 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -6.98 %
BPCHG =    0.44
KWCHG =    -0.44
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.004371 %

THE CORRECTED GROSS GENERATION IS...................... 379.34 MWe

THE CORRECTED NET GENERATION IS........................ 354.84 MWe

THE UNCORRECTED NET HEAT RATE IS..................... 10855.4  BTU/NKW

THE CORRECTED NET HEAT RATE IS....................... 10906.1  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  3870.0  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005615

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2450a

```
THE AVERAGE GROSS GENERATION IS........................ 489.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 25.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 2.57 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS.......................................... 104.54 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  89.37 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 71.60 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 76.03 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  80.77 PCT
THE AVERAGE COAL FLOW IS..........................  550800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8794.10 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 15.17 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  90.06 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  93.94 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS.........................................  93.24 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 2.86 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 3143985.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS........................................  -6.00 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS............................................  -5.16 %
BPCHG =    0.90
KWCHG =    -0.89
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.008872 %

THE CORRECTED GROSS GENERATION IS...................... 484.70 MWe

THE CORRECTED NET GENERATION IS........................ 459.50 MWe

THE UNCORRECTED NET HEAT RATE IS...................... 10443.7  BTU/NKW

THE CORRECTED NET HEAT RATE IS........................ 10541.4  BTU/NKW

THE TOTAL HEAT INPUT IS.............................  4843.8  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005616

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2450b

```
THE AVERAGE GROSS GENERATION IS........................ 486.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 26.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 2.66 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS........................................... 105.64 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  90.15 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............ 72.01 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............ 79.14 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  71.42 PCT
THE AVERAGE COAL FLOW IS..........................  558000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8819.80 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 15.49 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  90.61 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  94.42 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  93.97 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 2.95 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 3132594.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -5.79 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -4.91 %
BPCHG =    0.93
KWCHG =    -0.92
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.009188 %

THE CORRECTED GROSS GENERATION IS...................... 481.58 MWe

THE CORRECTED NET GENERATION IS........................ 455.48 MWe

THE UNCORRECTED NET HEAT RATE IS...................... 10701.1  BTU/NKW

THE CORRECTED NET HEAT RATE IS........................ 10805.1  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  4921.4  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005617

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2550a

```
THE AVERAGE GROSS GENERATION IS........................ 579.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 29.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 2.79 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS.......................................... 106.61 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  88.86 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 69.88 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 72.73 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  86.41 PCT
THE AVERAGE COAL FLOW IS..........................  636500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8866.80 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS........... 341000 GPM
THE COOLING TOWER RANGE IS............................ 17.75 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  88.71 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  93.88 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  94.03 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 3.21 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 3734964.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -4.45 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -3.49 %
BPCHG =    1.01
KWCHG =    -1.00
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.009963 %

THE CORRECTED GROSS GENERATION IS...................... 573.29 MWe

THE CORRECTED NET GENERATION IS........................ 543.59 MWe

THE UNCORRECTED NET HEAT RATE IS...................... 10274.4  BTU/NKW

THE CORRECTED NET HEAT RATE IS........................ 10382.3  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  5643.7  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005618

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2550b

THE AVERAGE GROSS GENERATION IS..... 583.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.86 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.37 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.42 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.49 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.88 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 80.88 PCT
THE AVERAGE COAL FLOW IS..... 643800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8823.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 17.95 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.75 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.11 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.78 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.22 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3766431.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.25 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.44 %
BPCHG = 0.85
KWCHG = -0.84
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008385 %

THE CORRECTED GROSS GENERATION IS..... 578.15 MWe

THE CORRECTED NET GENERATION IS..... 549.55 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10245.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10336.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5680.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005619

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2650a

```
THE AVERAGE GROSS GENERATION IS........................ 690.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 31.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 3.49 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS........................................... 114.11 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  92.74 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 74.89 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 78.09 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  86.20 PCT
THE AVERAGE COAL FLOW IS..........................  771700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8778.50 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 21.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  92.16 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  94.12 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  94.70 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 3.69 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 4524369.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -2.21 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -1.80 %
BPCHG =    0.42
KWCHG =    -0.42
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.004217 %

THE CORRECTED GROSS GENERATION IS...................... 687.10 MWe

THE CORRECTED NET GENERATION IS........................ 655.90 MWe

THE UNCORRECTED NET HEAT RATE IS...................... 10282.9  BTU/NKW

THE CORRECTED NET HEAT RATE IS........................ 10328.3  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  6774.4  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005620

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2650b

```
THE AVERAGE GROSS GENERATION IS........................ 681.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 30.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 3.53 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS........................................... 114.55 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  93.31 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 75.58 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 78.76 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  86.44 PCT
THE AVERAGE COAL FLOW IS..........................  778500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8700.30 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
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CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 21.24 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  92.79 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  94.10 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  94.62 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 3.66 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 4466649.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -2.16 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -1.88 %
BPCHG =    0.29
KWCHG =    -0.29
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.002886 %

THE CORRECTED GROSS GENERATION IS...................... 679.04 MWe

THE CORRECTED NET GENERATION IS........................ 648.94 MWe

THE UNCORRECTED NET HEAT RATE IS..................... 10405.9  BTU/NKW

THE CORRECTED NET HEAT RATE IS....................... 10437.3  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  6773.2  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005621

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2750a

```
THE AVERAGE GROSS GENERATION IS........................ 792.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 33.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 3.73 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS........................................... 116.05 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  93.76 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 72.55 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 76.05 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  84.50 PCT
THE AVERAGE COAL FLOW IS..........................  879800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8831.10 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 22.29 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  91.12 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  94.24 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  96.89 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 4.04 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 5301440.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -1.32 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -0.82 %
BPCHG =    0.52
KWCHG =    -0.51
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.005131 %

THE CORRECTED GROSS GENERATION IS...................... 787.96 MWe

THE CORRECTED NET GENERATION IS........................ 754.76 MWe

THE UNCORRECTED NET HEAT RATE IS...................... 10239.3  BTU/NKW

THE CORRECTED NET HEAT RATE IS........................ 10294.2  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  7769.6  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005622

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2750b

```
THE AVERAGE GROSS GENERATION IS........................ 796.00 MWe
THE AVERAGE AUXILIARY USAGE IS......................... 35.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS.................... 3.86 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS........................................... 117.15 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS.........................................  94.78 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS............. 73.67 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS............. 78.81 DEG F
THE COMPUTED RELATIVE HUMIDITY IS.....................  78.81 PCT
THE AVERAGE COAL FLOW IS..........................  885800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS................ 8791.00 BTU/LB
THE AVERAGE OIL FLOW IS...............................    0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..............       0.00 BTU/BBL
```

CALCULATED RESULTS

```
THE COOLING TOWER CIRCULATING WATER FLOW IS............ 341000 GPM
THE COOLING TOWER RANGE IS............................. 22.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS...................  91.98 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS...........  94.48 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS........................................  97.28 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS................... 4.12 IN-HG
THE TURBINE THROTTLE FLOW IS....................... 5346742.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS.......................................  -1.09 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS...........................................  -0.67 %
BPCHG =    0.43
KWCHG =    -0.43
THE BACKPRESSURE CORRECTION FACTOR IS...............  1.004280 %

THE CORRECTED GROSS GENERATION IS...................... 792.61 MWe

THE CORRECTED NET GENERATION IS........................ 757.41 MWe

THE UNCORRECTED NET HEAT RATE IS...................... 10235.4  BTU/NKW

THE CORRECTED NET HEAT RATE IS........................ 10281.2  BTU/NKW

THE TOTAL HEAT INPUT IS...............................  7787.1  MMBTU
```


Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005623

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2842a

THE AVERAGE GROSS GENERATION IS..... 882.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.77 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 125.02 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 97.45 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 79.31 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 92.85 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 55.11 PCT
THE AVERAGE COAL FLOW IS..... 995200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8702.80 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.57 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.78 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.13 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.79 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.69 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6076838.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.43 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.30 %
BPCHG = -0.13
KWCHG = 0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998739 %

THE CORRECTED GROSS GENERATION IS..... 883.11 MWe

THE CORRECTED NET GENERATION IS..... 844.51 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10269.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10255.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8661.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005624

HEAT RATE CORRECTIONS
Independence - Unit Two

MEASURED TEST INPUTS FROM FILE 2842b

THE AVERAGE GROSS GENERATION IS..... 880.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.77 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 125.17 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 97.63 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.98 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 95.11 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 48.42 PCT
THE AVERAGE COAL FLOW IS..... 1007200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8727.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.54 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 97.31 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.63 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.95 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.69 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6062221.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.43 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.30 %
BPCHG = -0.13
KWCHG = 0.13
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998681 %

THE CORRECTED GROSS GENERATION IS..... 881.16 MWe

THE CORRECTED NET GENERATION IS..... 842.96 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10441.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10427.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8789.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005625

07-25-1996 07:28:16

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1160a

THE AVERAGE GROSS GENERATION IS..... 194.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.00 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 92.82 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.93 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.02 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.07 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 70.14 PCT
THE AVERAGE COAL FLOW IS..... 258400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8743.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.89 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.17 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.04 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.80 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.43 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1281741.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -13.73 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.79 %
BPCHG = 3.41
KWCHG = -3.29
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.032944 %

THE CORRECTED GROSS GENERATION IS..... 187.81 MWe

THE CORRECTED NET GENERATION IS..... 161.81 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13448.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13962.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2259.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:29:05

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1160b

THE AVERAGE GROSS GENERATION IS..... 196.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.96 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 92.20 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.28 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 67.47 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.69 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 72.86 PCT
THE AVERAGE COAL FLOW IS..... 258900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8742.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.92 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.70 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.85 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.43 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.40 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1290160.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -13.95 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.96 %
BPCHG = 3.48
KWCHG = -3.36
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.033619 %

THE CORRECTED GROSS GENERATION IS..... 189.63 MWe

THE CORRECTED NET GENERATION IS..... 163.53 MWe

THE UNCORRECTED NET HEAT RATE IS..... 13322.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13842.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2263.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:29:57

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1250a

THE AVERAGE GROSS GENERATION IS..... 289.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.92 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 93.74 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.33 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 63.40 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 70.96 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 66.30 PCT
THE AVERAGE COAL FLOW IS..... 342900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8799.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.41 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.57 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.46 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.23 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.55 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1875189.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.82 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -8.71 %
BPCHG = 3.53
KWCHG = -3.41
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.034123 %

THE CORRECTED GROSS GENERATION IS..... 279.46 MWe

THE CORRECTED NET GENERATION IS..... 253.46 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11472.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11904.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3017.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:30:33

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1250b

THE AVERAGE GROSS GENERATION IS..... 288.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.89 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 93.38 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.00 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 62.50 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 69.50 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 67.91 PCT
THE AVERAGE COAL FLOW IS..... 341200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8719.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.38 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.47 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.35 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.88 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.51 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1866861.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.99 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -8.92 %
BPCHG = 3.49
KWCHG = -3.37
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.033728 %

THE CORRECTED GROSS GENERATION IS..... 278.60 MWe

THE CORRECTED NET GENERATION IS..... 252.70 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11350.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11772.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2974.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:37:22

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1350a

THE AVERAGE GROSS GENERATION IS..... 375.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.13 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 96.13 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.36 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 61.74 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.34 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 55.15 PCT
THE AVERAGE COAL FLOW IS..... 418200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8841.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.77 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.93 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.36 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.79 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.86 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2420409.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -9.12 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.33 %
BPCHG = 3.07
KWCHG = -2.98
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.029753 %

THE CORRECTED GROSS GENERATION IS..... 364.17 MWe

THE CORRECTED NET GENERATION IS..... 338.07 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10597.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10937.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3697.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:38:03

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1350b

THE AVERAGE GROSS GENERATION IS..... 374.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.11 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.64 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 82.95 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 61.34 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.41 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 56.61 PCT
THE AVERAGE COAL FLOW IS..... 418400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8849.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.69 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.25 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.26 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.95 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.88 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2412537.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -9.21 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.27 %
BPCHG = 3.25
KWCHG = -3.14
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.031443 %

THE CORRECTED GROSS GENERATION IS..... 362.60 MWe

THE CORRECTED NET GENERATION IS..... 336.10 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10654.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11016.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3702.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:39:07

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1450a

THE AVERAGE GROSS GENERATION IS..... 479.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.82 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 102.44 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.91 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 65.59 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.87 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 61.55 PCT
THE AVERAGE COAL FLOW IS..... 535300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8649.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.53 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.36 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.08 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.63 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.47 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3104980.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.35 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.28 %
BPCHG = 2.20
KWCHG = -2.15
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.021486 %

THE CORRECTED GROSS GENERATION IS..... 468.92 MWe

THE CORRECTED NET GENERATION IS..... 441.62 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10249.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10483.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4629.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:39:52

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1450b

THE AVERAGE GROSS GENERATION IS..... 477.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.82 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 102.40 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 65.51 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.59 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 55.88 PCT
THE AVERAGE COAL FLOW IS..... 533000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8693.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.58 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.70 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.46 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.58 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.48 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3093073.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.37 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.27 %
BPCHG = 2.22
KWCHG = -2.17
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.021701 %

THE CORRECTED GROSS GENERATION IS..... 466.87 MWe

THE CORRECTED NET GENERATION IS..... 439.87 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10296.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10533.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4633.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 08:21:30

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1550a

THE AVERAGE GROSS GENERATION IS..... 579.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.73 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 102.93 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.57 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 60.87 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 68.42 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 65.08 PCT
THE AVERAGE COAL FLOW IS..... 630600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8740.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.36 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.49 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.01 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.09 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.63 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3730586.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.57 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.37 %
BPCHG = 2.30
KWCHG = -2.25
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.022519 %

THE CORRECTED GROSS GENERATION IS..... 566.25 MWe

THE CORRECTED NET GENERATION IS..... 537.45 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10017.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10254.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5511.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 08:21:43

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1550b

THE AVERAGE GROSS GENERATION IS..... 578.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.76 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.26 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.92 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 61.74 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 70.77 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 60.31 PCT
THE AVERAGE COAL FLOW IS..... 628100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8733.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.34 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 85.31 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.32 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.93 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.62 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3726464.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.52 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.41 %
BPCHG = 2.21
KWCHG = -2.16
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.021618 %

THE CORRECTED GROSS GENERATION IS..... 565.77 MWe

THE CORRECTED NET GENERATION IS..... 537.17 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9985.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10212.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5485.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:42:37

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1650a

THE AVERAGE GROSS GENERATION IS..... 689.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.16 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.31 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.31 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 62.13 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 70.84 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 61.62 PCT
THE AVERAGE COAL FLOW IS..... 746500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8798.30 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.00 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 85.68 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.44 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.06 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.09 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4485741.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.87 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.93 %
BPCHG = 2.00
KWCHG = -1.96
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.019579 %

THE CORRECTED GROSS GENERATION IS..... 675.77 MWe

THE CORRECTED NET GENERATION IS..... 643.27 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10004.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10210.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6567.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:43:13

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1650b

THE AVERAGE GROSS GENERATION IS..... 687.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.20 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.74 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.63 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 62.50 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.47 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 60.93 PCT
THE AVERAGE COAL FLOW IS..... 741700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8800.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.11 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.28 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.48 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.84 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.08 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4475694.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.80 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.95 %
BPCHG = 1.91
KWCHG = -1.87
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.018726 %

THE CORRECTED GROSS GENERATION IS..... 674.37 MWe

THE CORRECTED NET GENERATION IS..... 642.07 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9969.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10165.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6527.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:45:51

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1750a

THE AVERAGE GROSS GENERATION IS..... 786.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.60 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 118.16 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.06 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.39 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.80 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.77 PCT
THE AVERAGE COAL FLOW IS..... 874200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8726.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.10 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.65 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.70 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.11 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.97 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5349715.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.19 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.89 %
BPCHG = 0.70
KWCHG = -0.69
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006925 %

THE CORRECTED GROSS GENERATION IS..... 780.59 MWe

THE CORRECTED NET GENERATION IS..... 742.99 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10193.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10267.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7628.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:53:40

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1750a

THE AVERAGE GROSS GENERATION IS..... 786.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 37.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.25 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 118.16 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.06 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.39 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.80 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.77 PCT
THE AVERAGE COAL FLOW IS..... 874200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8726.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.10 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.65 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.70 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.11 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.60 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5305993.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.46 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.18 %
BPCHG = 0.64
KWCHG = -0.64
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006404 %

THE CORRECTED GROSS GENERATION IS..... 781.00 MWe

THE CORRECTED NET GENERATION IS..... 743.40 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10193.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10261.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7628.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:53:52

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1750b

THE AVERAGE GROSS GENERATION IS..... 789.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.24 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 117.97 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.64 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.22 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.53 PCT
THE AVERAGE COAL FLOW IS..... 882400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8704.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.33 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.48 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.52 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.68 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.58 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5328479.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.47 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.16 %
BPCHG = 0.64
KWCHG = -0.63
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006316 %

THE CORRECTED GROSS GENERATION IS..... 784.05 MWe

THE CORRECTED NET GENERATION IS..... 746.05 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10226.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10294.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7680.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:54:13

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1836a

THE AVERAGE GROSS GENERATION IS..... 876.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.81 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 122.07 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.77 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.73 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.46 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 83.94 PCT
THE AVERAGE COAL FLOW IS..... 976400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8767.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 28.30 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.28 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.66 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.15 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.11 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6037735.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.49 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.97 %
BPCHG = 0.47
KWCHG = -0.47
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.004673 %

THE CORRECTED GROSS GENERATION IS..... 871.93 MWe

THE CORRECTED NET GENERATION IS..... 832.53 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10233.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10283.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8561.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 07:54:27

HEAT RATE CORRECTIONS FOR ISES ONE

MEASURED TEST INPUTS FROM FILE 1836b

THE AVERAGE GROSS GENERATION IS..... 872.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 40.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.90 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 122.76 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.34 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.16 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.32 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.74 PCT
THE AVERAGE COAL FLOW IS..... 985600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8722.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 28.42 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.90 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.71 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.15 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.13 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6018988.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.64 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 1.01 %
BPCHG = 0.37
KWCHG = -0.36
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.003637 %

THE CORRECTED GROSS GENERATION IS..... 868.84 MWe

THE CORRECTED NET GENERATION IS..... 828.54 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10336.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10376.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8597.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ENTERGY

Inter-Office Correspondence

TO:	**Jim Campbell**	**T-EP-16**
	Mike Bakewell	**T-EP-16**
	Mike Kolbus	**A-ISES**
	William Phillips	**A-SOC**
	Henry Thompson	**A-TCBY-23G**
FROM:	**Pat Klepper**	**Phone 8-762-4529**
	Roger Lawson	**Phone 8-764-7329**

DATE: **8/15/96**

SUBJECT: **1996 Independence Plant - Heat Rate Test Results**

A series of heat rate tests were performed on both Independence Units starting July 9 and ending July 18. Co-owners were notified prior to the testing and representatives from Arkansas Electric Cooperative were present to observe the testing. Testing was performed in an unbiased manner.

Each unit was tested throughout its load range; Unit One was tested from 160 net MW through full load and Unit Two was tested from 250 net MW through full load. Unit One's heat rate curve improved significantly when compared to last year. Unit Two's curve indicates a slight degradation in its heat rate. Unit Two had a minor boiler tube leak during the testing.

The coefficients for the 1996 heat rate curves are;

Term	Unit One	Unit Two
X^2	0.002644	0.002821
X^1	6.817539	6.679695
X^0	1093.751	1200.614

We recommend that these results be implemented for dispatch and co-owner billing.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

The complete results are presented as charts on an the EXCEL spreadsheet "ISHR1996.XLS" which was sent via. cc:mail along with this memo.

WPK/wpk

c:	George Eubanks	A-WB-SC
	Phil Carter	A-SOC
	David Harris	A.E.C.C.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:53:58

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2250a

THE AVERAGE GROSS GENERATION IS..... 281.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.92 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 96.24 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.22 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.43 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.47 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.64 PCT
THE AVERAGE COAL FLOW IS..... 346600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8791.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.02 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.25 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.25 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.22 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.29 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1826200.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -12.01 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.19 %
BPCHG = 2.08
KWCHG = -2.03
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.020331 %

THE CORRECTED GROSS GENERATION IS..... 275.40 MWe

THE CORRECTED NET GENERATION IS..... 251.40 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11856.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12120.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3047.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:54:44

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2250b

THE AVERAGE GROSS GENERATION IS..... 281.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.86 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.72 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 85.75 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.01 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.01 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.74 PCT
THE AVERAGE COAL FLOW IS..... 345800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8852.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.97 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.24 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.24 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.75 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.22 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1821791.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -12.30 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.55 %
BPCHG = 2.00
KWCHG = -1.96
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.019634 %

THE CORRECTED GROSS GENERATION IS..... 275.59 MWe

THE CORRECTED NET GENERATION IS..... 251.59 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11911.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12167.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3061.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:55:01

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2335a

THE AVERAGE GROSS GENERATION IS..... 368.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.12 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.57 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.41 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 67.22 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 69.90 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.56 PCT
THE AVERAGE COAL FLOW IS..... 426700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8841.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.16 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.38 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.51 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.54 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.60 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2376646.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -9.29 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.43 %
BPCHG = 2.05
KWCHG = -2.01
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.020095 %

THE CORRECTED GROSS GENERATION IS..... 360.75 MWe

THE CORRECTED NET GENERATION IS..... 336.85 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10964.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11200.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3772.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:55:16

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2335b

THE AVERAGE GROSS GENERATION IS..... 361.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.08 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.89 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.63 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 69.31 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.44 PCT
THE AVERAGE COAL FLOW IS..... 425000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8810.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.07 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.37 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.51 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.96 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.56 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2330118.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -9.58 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.72 %
BPCHG = 2.06
KWCHG = -2.02
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.020173 %

THE CORRECTED GROSS GENERATION IS..... 353.86 MWe

THE CORRECTED NET GENERATION IS..... 329.96 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11108.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11348.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3744.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:55:50

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2420a

THE AVERAGE GROSS GENERATION IS..... 454.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.57 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.71 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.04 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.95 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.95 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.73 PCT
THE AVERAGE COAL FLOW IS..... 516500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8730.40 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 14.67 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.50 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.82 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.36 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.82 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2933958.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.41 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.61 %
BPCHG = 0.85
KWCHG = -0.84
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008416 %

THE CORRECTED GROSS GENERATION IS..... 450.21 MWe

THE CORRECTED NET GENERATION IS..... 424.51 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10528.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10622.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4509.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:56:05

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2420b

THE AVERAGE GROSS GENERATION IS..... 450.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.54 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.20 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.67 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.40 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.60 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.61 PCT
THE AVERAGE COAL FLOW IS..... 511500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8695.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 14.53 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.76 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.70 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.61 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.84 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2907335.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.55 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.60 %
BPCHG = 1.02
KWCHG = -1.01
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010086 %

THE CORRECTED GROSS GENERATION IS..... 445.51 MWe

THE CORRECTED NET GENERATION IS..... 420.21 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10472.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10584.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4447.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:56:20

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2505a

THE AVERAGE GROSS GENERATION IS..... 526.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.46 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.49 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.17 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.95 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 69.58 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.72 PCT
THE AVERAGE COAL FLOW IS..... 597600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8791.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 16.32 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.83 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.77 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.11 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.99 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3365858.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.82 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.50 %
BPCHG = 1.41
KWCHG = -1.39
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013893 %

THE CORRECTED GROSS GENERATION IS..... 518.79 MWe

THE CORRECTED NET GENERATION IS..... 492.59 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10511.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10665.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5253.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:56:32

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2505b

THE AVERAGE GROSS GENERATION IS..... 529.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.42 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.01 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.63 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 67.19 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 70.87 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.44 PCT
THE AVERAGE COAL FLOW IS..... 589400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8803.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 16.38 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.05 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.95 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.53 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.94 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3382446.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.87 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.61 %
BPCHG = 1.34
KWCHG = -1.32
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013199 %

THE CORRECTED GROSS GENERATION IS..... 522.11 MWe

THE CORRECTED NET GENERATION IS..... 496.71 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10303.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10446.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5188.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:56:46

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2590a

THE AVERAGE GROSS GENERATION IS..... 617.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.82 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.71 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.93 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 69.97 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.00 PCT
THE AVERAGE COAL FLOW IS..... 685800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8842.20 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.89 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.20 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.01 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.63 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.40 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3983521.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.04 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.80 %
BPCHG = 1.30
KWCHG = -1.28
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012796 %

THE CORRECTED GROSS GENERATION IS..... 609.20 MWe

THE CORRECTED NET GENERATION IS..... 581.00 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10298.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10437.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6064.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:57:02

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2590b

THE AVERAGE GROSS GENERATION IS..... 610.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.89 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 108.55 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.67 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.34 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.63 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 76.90 PCT
THE AVERAGE COAL FLOW IS..... 684200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8857.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.88 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.73 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.33 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.27 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.37 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3943233.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.96 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.90 %
BPCHG = 1.10
KWCHG = -1.09
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010884 %

THE CORRECTED GROSS GENERATION IS..... 603.43 MWe

THE CORRECTED NET GENERATION IS..... 575.53 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10410.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10529.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6060.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:57:17

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2675a

THE AVERAGE GROSS GENERATION IS..... 720.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.52 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 115.03 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.66 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.25 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 90.07 PCT
THE AVERAGE COAL FLOW IS..... 798800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8780.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.88 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.03 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.80 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.84 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4731723.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.02 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.39 %
BPCHG = 0.64
KWCHG = -0.64
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006390 %

THE CORRECTED GROSS GENERATION IS..... 715.43 MWe

THE CORRECTED NET GENERATION IS..... 684.03 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10185.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10253.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7013.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:57:28

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2675b

THE AVERAGE GROSS GENERATION IS..... 712.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.56 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 115.46 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.28 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.04 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.97 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 83.28 PCT
THE AVERAGE COAL FLOW IS..... 798000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8780.60 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.18 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.78 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.29 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.79 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.81 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4681128.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.97 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.46 %
BPCHG = 0.52
KWCHG = -0.52
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005189 %

THE CORRECTED GROSS GENERATION IS..... 708.32 MWe

THE CORRECTED NET GENERATION IS..... 676.32 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10304.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10360.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7006.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:57:44

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2760a

THE AVERAGE GROSS GENERATION IS..... 801.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 34.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.20 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 121.21 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.20 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.04 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 89.69 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 53.62 PCT
THE AVERAGE COAL FLOW IS..... 896500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8812.50 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.01 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.83 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.08 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.45 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.34 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5418422.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.53 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.29 %
BPCHG = 0.24
KWCHG = -0.24
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.002437 %

THE CORRECTED GROSS GENERATION IS..... 799.05 MWe

THE CORRECTED NET GENERATION IS..... 764.15 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10312.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10338.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7900.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:58:10

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2760b

THE AVERAGE GROSS GENERATION IS..... 799.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 34.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.24 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 121.53 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.57 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.62 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 89.40 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 56.18 PCT
THE AVERAGE COAL FLOW IS..... 895900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8851.70 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 24.96 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.33 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.93 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.17 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.31 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5406554.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.47 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.35 %
BPCHG = 0.12
KWCHG = -0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001195 %

THE CORRECTED GROSS GENERATION IS..... 798.05 MWe

THE CORRECTED NET GENERATION IS..... 763.35 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10375.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10388.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7930.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:58:41

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2842a

THE AVERAGE GROSS GENERATION IS..... 872.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.77 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 125.62 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 98.24 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.62 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 93.56 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 45.49 PCT
THE AVERAGE COAL FLOW IS..... 990700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8872.10 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.38 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.30 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 97.01 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.96 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.86 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6003753.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.43 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.58 %
BPCHG = 0.14
KWCHG = -0.14
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001403 %

THE CORRECTED GROSS GENERATION IS..... 870.78 MWe

THE CORRECTED NET GENERATION IS..... 832.08 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10547.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10563.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8789.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

07-25-1996 10:58:52

HEAT RATE CORRECTIONS FOR ISES TWO

MEASURED TEST INPUTS FROM FILE 2842b

THE AVERAGE GROSS GENERATION IS..... 872.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.85 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 126.31 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 98.90 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.64 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 94.04 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 44.39 PCT
THE AVERAGE COAL FLOW IS..... 977700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8887.90 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.41 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.44 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 97.16 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 99.62 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.94 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6013128.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.56 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.70 %
BPCHG = 0.14
KWCHG = -0.14
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001400 %

THE CORRECTED GROSS GENERATION IS..... 870.78 MWe

THE CORRECTED NET GENERATION IS..... 831.68 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10433.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10448.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8689.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence Plant - Unit One
Heat Rate Test Inputs
1997

Test Load	160	160	250	250	350	350	450	450	550	550	650	650	750	750	836	836
Test Date	7/21/97	7/21/97	7/23/97	7/23/97	7/23/97	7/23/97	7/21/97	7/21/97	7/22/97	7/22/97	7/22/97	7/22/97	7/24/97	7/24/97	7/24/97	7/27/97
Start Time	200	300	200	300	600	700	700	800	200	300	600	700	1000	1100	1500	1600
End Time	300	400	300	400	700	800	800	900	300	400	700	800	1100	1200	1600	1700
Data File Name	1160a	1160b	1250a	1250b	1350a	1350b	1450a	1450b	1550a	1550b	1650a	1650b	1750a	1750b	1836a	1836b
Gross Generation (MW)	201	203	275	278	370		471	479	582	585	684	683	788	788	863	861
Aux Usage (MW)	24.9	25.4	26	25.1	25.3		28.1	28.2	29.9	29.5	32.3	31.9	35.8	35.8	39.9	39.9
Back Pressure (InHg)	2.11	2.08	2.32	2.28	2.52		3.01	3.07	3.67	3.66	3.89	3.96	4.66	4.75	5.46	5.50
Hot Water Temp (DEGF)	96.95	96.54	98.94	98.46	100.97		106.29	107.18	112.96	112.82	113.99	114.80	119.94	120.69	125.89	126.35
Cold Water Temp (DEGF)	88.83	88.49	88.21	87.66	87.71		90.00	90.81	93.21	93.13	91.25	91.94	93.42	94.10	96.40	96.82
Wet Bulb Temperature (DEGF)	74.24	73.28	73.97	73.71	72.76		72.80	74.55	75.50	75.50	73.84	74.08	77.48	78.24	80.47	80.28
Dry Bulb Temperature (DEGF)	88.83	76.92	77.95	76.87	75.68		75.47	78.88	82.99	82.42	81.90	82.00	86.90	89.53	95.40	95.62
Coal Flow (PPH)	262700	263900	343700	346100	436100		546100	548200	651200	649900	750900	754800	898700	901000	976400	978900
Coal Heating Value (BTU/#)	8678.0	8698.0	8630.0	8566.0	8517.0		8634.0	8668.0	8746.0	8651.0	8677.0	8740.0	8525.0	8588.0	8636.0	8584.0
Oil Flow (BBL/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil Heating Value (BTU/BBL)	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-03-1997 23:55:38

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1160a

THE AVERAGE GROSS GENERATION IS..... 201.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.11 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 96.95 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.83 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.24 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.91 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.13 PCT
THE AVERAGE COAL FLOW IS..... 262700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8678.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.12 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.88 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.63 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.58 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.28 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1339672.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -12.76 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -11.59 %
BPCHG = 1.34
KWCHG = -1.32
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013180 %

THE CORRECTED GROSS GENERATION IS..... 198.39 MWe

THE CORRECTED NET GENERATION IS..... 173.49 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12945.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13140.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2279.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-03-1997 23:56:17

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1160b

THE AVERAGE GROSS GENERATION IS..... 203.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.08 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 96.54 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.49 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.28 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.92 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 84.16 PCT
THE AVERAGE COAL FLOW IS..... 263900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8698.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.05 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.82 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.34 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.01 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.30 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1349035.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -12.93 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -11.45 %
BPCHG = 1.70
KWCHG = -1.67
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.016685 %

THE CORRECTED GROSS GENERATION IS..... 199.67 MWe

THE CORRECTED NET GENERATION IS..... 174.27 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12924.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 13171.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2295.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-03-1997 23:56:54

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1250a

THE AVERAGE GROSS GENERATION IS..... 275.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.32 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.94 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.21 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.97 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.95 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 83.08 PCT
THE AVERAGE COAL FLOW IS..... 343700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8630.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.73 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.80 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.56 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 90.96 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.51 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1826690.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.01 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.02 %
BPCHG = 1.10
KWCHG = -1.09
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010893 %

THE CORRECTED GROSS GENERATION IS..... 272.04 MWe

THE CORRECTED NET GENERATION IS..... 246.04 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11912.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12055.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2966.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-03-1997 23:57:36

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1250b

THE AVERAGE GROSS GENERATION IS..... 278.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.28 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.46 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.66 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.71 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.87 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.08 PCT
THE AVERAGE COAL FLOW IS..... 346100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8566.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.80 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.66 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.44 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 90.44 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.47 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1841142.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.18 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.20 %
BPCHG = 1.09
KWCHG = -1.08
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010812 %

THE CORRECTED GROSS GENERATION IS..... 275.03 MWe

THE CORRECTED NET GENERATION IS..... 249.93 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11722.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11862.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2964.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-03-1997 23:58:14

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1350a

THE AVERAGE GROSS GENERATION IS..... 370.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.52 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.97 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.71 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.76 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.68 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.77 PCT
THE AVERAGE COAL FLOW IS..... 436100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8517.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.26 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.15 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.57 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.13 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.77 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2423948.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.65 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.66 %
BPCHG = 1.08
KWCHG = -1.07
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010680 %

THE CORRECTED GROSS GENERATION IS..... 366.09 MWe

THE CORRECTED NET GENERATION IS..... 340.79 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10775.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10899.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3714.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-03-1997 23:58:47

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1450a

THE AVERAGE GROSS GENERATION IS..... 471.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.01 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.29 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.00 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.80 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.47 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 87.75 PCT
THE AVERAGE COAL FLOW IS..... 546100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8634.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 16.29 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.39 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.73 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.33 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.29 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3075452.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.81 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.92 %
BPCHG = 0.94
KWCHG = -0.93
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009305 %

THE CORRECTED GROSS GENERATION IS..... 466.66 MWe

THE CORRECTED NET GENERATION IS..... 438.56 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10645.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10751.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4715.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:01:10

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1450b

THE AVERAGE GROSS GENERATION IS..... 479.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.07 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.18 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.81 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.55 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.88 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 81.96 PCT
THE AVERAGE COAL FLOW IS..... 548200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8668.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 16.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.90 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.96 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.87 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.25 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3128792.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.56 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.03 %
BPCHG = 0.56
KWCHG = -0.56
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005559 %

THE CORRECTED GROSS GENERATION IS..... 476.35 MWe

THE CORRECTED NET GENERATION IS..... 448.15 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10540.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10603.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4751.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:06:00

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1550a

THE AVERAGE GROSS GENERATION IS..... 582.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.67 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.96 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.21 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.50 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.99 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 71.46 PCT
THE AVERAGE COAL FLOW IS..... 651200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8746.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.75 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.45 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.69 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.45 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.79 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3833876.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.20 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.88 %
BPCHG = 0.33
KWCHG = -0.33
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.003333 %

THE CORRECTED GROSS GENERATION IS..... 580.07 MWe

THE CORRECTED NET GENERATION IS..... 550.17 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10315.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10352.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5695.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:06:53

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1550b

THE AVERAGE GROSS GENERATION IS..... 585.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.66 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.82 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.13 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.50 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.42 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.32 PCT
THE AVERAGE COAL FLOW IS..... 649900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8651.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.69 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.32 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.56 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.37 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.78 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3852171.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.22 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.89 %
BPCHG = 0.34
KWCHG = -0.33
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.003342 %

THE CORRECTED GROSS GENERATION IS..... 583.05 MWe

THE CORRECTED NET GENERATION IS..... 553.55 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10121.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10156.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5622.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:07:37

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1650a

THE AVERAGE GROSS GENERATION IS..... 684.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.89 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 113.99 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.25 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.84 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 81.90 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 69.06 PCT
THE AVERAGE COAL FLOW IS..... 750900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8677.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.74 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.52 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.02 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.75 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.15 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4522225.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.36 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.78 %
BPCHG = 0.59
KWCHG = -0.59
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005876 %

THE CORRECTED GROSS GENERATION IS..... 680.00 MWe

THE CORRECTED NET GENERATION IS..... 647.70 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9997.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10059.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6515.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:08:39

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1650b

THE AVERAGE GROSS GENERATION IS..... 683.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.96 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 114.80 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.94 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.08 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.00 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 69.59 PCT
THE AVERAGE COAL FLOW IS..... 754800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8740.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.86 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 92.50 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.99 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.44 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.23 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4523054.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.21 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.60 %
BPCHG = 0.62
KWCHG = -0.62
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006181 %

THE CORRECTED GROSS GENERATION IS..... 678.80 MWe

THE CORRECTED NET GENERATION IS..... 646.90 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10132.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10197.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6597.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:09:25

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1750a

THE AVERAGE GROSS GENERATION IS..... 788.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 35.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.66 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.94 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.42 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.48 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 86.90 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 66.10 PCT
THE AVERAGE COAL FLOW IS..... 898700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8525.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.52 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.77 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.42 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.08 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.74 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5372826.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.30 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.45 %
BPCHG = 0.15
KWCHG = -0.15
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001477 %

THE CORRECTED GROSS GENERATION IS..... 786.84 MWe

THE CORRECTED NET GENERATION IS..... 751.04 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10185.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10201.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7661.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:10:01

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1750b

THE AVERAGE GROSS GENERATION IS..... 788.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 35.80 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.75 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 120.69 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.10 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.24 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 89.53 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 60.90 PCT
THE AVERAGE COAL FLOW IS..... 901000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8588.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.59 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.73 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.73 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.10 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.75 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5384069.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.46 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.46 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 788.00 MWe

THE CORRECTED NET GENERATION IS..... 752.20 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10286.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10286.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7737.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:10:42

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1836a

THE AVERAGE GROSS GENERATION IS..... 863.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.46 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 125.89 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.40 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 80.47 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 95.40 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 51.95 PCT
THE AVERAGE COAL FLOW IS..... 976400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8636.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 29.49 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 97.59 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.36 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.18 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.30 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6016513.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 1.54 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 1.28 %
BPCHG = -0.25
KWCHG = 0.25
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.997467 %

THE CORRECTED GROSS GENERATION IS..... 865.19 MWe

THE CORRECTED NET GENERATION IS..... 825.29 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10244.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10217.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8432.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-04-1997 00:15:30

HEAT RATE CORRECTIONS FOR INDEPENDENCE ONE

MEASURED TEST INPUTS FROM FILE 1836b

THE AVERAGE GROSS GENERATION IS..... 861.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 5.50 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 126.35 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.82 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 80.28 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 95.62 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 50.86 PCT
THE AVERAGE COAL FLOW IS..... 978900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8584.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 29.53 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 97.65 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.43 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.60 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 5.34 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6005902.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 1.61 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 1.35 %
BPCHG = -0.25
KWCHG = 0.25
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.997456 %

THE CORRECTED GROSS GENERATION IS..... 863.20 MWe

THE CORRECTED NET GENERATION IS..... 823.30 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10233.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10206.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8402.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

ENTERGY

Inter-Office Correspondence

TO:	**Tom Schnatz**	**T-EP-17B**
	Mike Bakewell	**T-EP-17B**
	Mike Kolbus	**A-ISES**
	George Eubanks	**A-WB-SC**
	Al Ralston	**T-PKWD-3F**
	Tony James	**T-PKWD-3F**
	Henry Thompson	**T-PKWD-3H**

FROM:	**Roger Lawson**	**Phone 8-764-7329**
	Pat Klepper	**Phone 8-762-4529**

DATE: **9/11/97**

SUBJECT: **1997 Independence - Heat Rate Test Results**

Heat rate tests were performed on both Independence Units starting July 21 and ending August 27. Co-owners were notified prior to the testing and representatives from Arkansas Electric Cooperative were present to observe the testing. Testing was performed in an unbiased manner.

Unit one was tested from 160 net MW through full load and Unit Two was tested from 200 net MW through full load. When compared to last year, both units show improved heatrates at both low and high loads. Unit One's heat rate at mid load tested slightly higher than last year while Unit Two tested the same as last year.

Reasons for the improvements include maintenance during the spring outages, better cycle isolation, and closer attention to operator controllable parameters.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

The heat input at each of the corrected test loads is shown in the following table.

Corrected Test Load (Net MW)		**Heat Input (MMBTU/Hr)**	
Unit 1	Unit 2	Unit 1	Unit 2
173.49	202.17	2279.70	2592.40
174.27	202.36	2295.40	2604.70
246.04	248.29	2966.10	3013.60
249.93	248.89	2964.70	3052.30
340.79	354.70	3714.30	3921.90
340.79	361.10	3714.30	3955.90
438.56	439.41	4715.00	4702.40
448.15	442.91	4751.80	4792.10
550.17	544.47	5695.40	5681.50
553.55	544.98	5622.30	5644.30
646.90	641.51	6597.00	6693.40
647.70	646.11	6515.60	6593.60
751.04	739.89	7661.40	7607.60
752.20	748.55	7737.80	7702.90
823.30	839.04	8402.90	8718.60
825.29	842.28	8432.20	8759.20

The coefficients for the 1997 heat rate curves are:

Term	**Unit 1**	**Unit 2**
X^2	0.001698	0.002099
X^1	7.6923	7.3492
X^0	922.7501	1052.2471

We recommend that these results be implemented for economic dispatch and co-owner billing.

The complete results are presented as charts on an the EXCEL spreadsheet "ISHR1997.XLS" which is a cc:mail attachment along with this memo.

cc: David Harris A.E.C.C.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

Independence Plant - Unit Two
Heat Rate Test Inputs
1997

Test Load	160	160	250	250	350	350	450	450	550	550	650	650	650b	650b	750	750	842	842
Test Date	8/27/97	8/27/97	8/5/97	8/5/97	7/28/97	7/28/97	8/4/97	8/4/97	8/5/97	8/5/97	8/6/97	8/6/97	8/26/97	8/26/97	7/28/97	7/28/97	8/6/97	8/6/97
Start Time	400	500	200	300	200	300	300	400	700	800	200	300	1200	1300	1000	1100	700	800
End Time	500	600	300	400	300	400	400	500	800	900	300	400	1300	1400	1100	1200	800	900
Data File Name	2160a	2160b	2250a	2250b	2350a	2350b	2450a	2450b	2550a	2550b	2650a	2650b	2650ab	2650bb	2750a	2750b	2842a	2842b
Gross Generation (MW)	233	233	276	275	381	386	475	473	578	576	680	681	677	681	774	781	893	887
Aux Usage (MW)	24.6	24.1	23.6	23.2	26.3	24.9	25.5	27.1	28.1	26.3	29.9	30.7	30.3	29.4	33.2	33.3	38	36.4
Back Pressure (InHg)	1.884	1.867	2.080	2.061	2.688	2.664	2.547	2.506	2.846	2.943	2.759	2.730	3.697	3.733	4.114	4.218	3.324	3.346
Hot Water Temp (DEGF)	95.60	95.28	98.63	98.32	106.88	106.52	104.13	103.56	107.41	108.63	105.46	105.02	116.34	116.65	119.62	120.61	110.07	110.99
Cold Water Temp (DEGF)	86.87	86.48	88.44	88.13	93.94	93.59	88.93	88.52	89.30	90.51	84.89	84.29	94.92	95.18	95.45	96.24	83.83	84.20
Wet Bulb Temperature (DEGF)	67.65	66.78	72.92	72.61	78.48	78.27	68.87	68.56	70.54	71.26	60.43	59.15	73.16	72.97	76.83	78.68	57.55	59.51
Dry Bulb Temperature (DEGF)	73.56	70.86	75.56	74.90	84.30	83.97	76.17	75.48	73.45	75.44	68.92	65.10	91.95	94.26	82.44	85.84	63.52	67.42
Coal Flow (PPH)	292300	296700	337200	339100	443900	447800	554700	548000	645500	643800	788600	796600	748200	750300	880000	893300	1028200	1031300
Coal Heating Value (BTU/#)	8869.0	8779.0	9052.0	8887.0	8835.0	8834.0	8639.0	8581.0	8744.0	8825.0	8704.0	8515.0	8946.0	8788.0	8645.0	8623.0	8519.0	8454.0
Oil Flow (BBL/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil Heating Value (BTU/BBL)	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106	5748106

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-04-1997 15:42:40

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2160A

THE AVERAGE GROSS GENERATION IS..... 233.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.88 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.60 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.87 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 67.65 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.56 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 74.05 PCT
THE AVERAGE COAL FLOW IS..... 292300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8869.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.73 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.02 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.82 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.66 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.30 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1522970.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -13.42 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.97 %
BPCHG = 2.82
KWCHG = -2.75
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.027467 %

THE CORRECTED GROSS GENERATION IS..... 226.77 MWe

THE CORRECTED NET GENERATION IS..... 202.17 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12439.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12822.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2592.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-04-1997 15:42:56

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2160B

THE AVERAGE GROSS GENERATION IS..... 233.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 1.87 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 95.28 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 86.48 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 66.78 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 70.86 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 80.73 PCT
THE AVERAGE COAL FLOW IS..... 296700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8779.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.80 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 86.34 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.66 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.30 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1521462.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -13.52 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.95 %
BPCHG = 2.97
KWCHG = -2.89
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.028883 %

THE CORRECTED GROSS GENERATION IS..... 226.46 MWe

THE CORRECTED NET GENERATION IS..... 202.36 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12468.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12871.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2604.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-04-1997 15:43:14

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2650AB

THE AVERAGE GROSS GENERATION IS..... 677.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.70 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 116.34 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 94.92 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.16 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 91.95 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 39.49 PCT
THE AVERAGE COAL FLOW IS..... 748200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8946.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 21.42 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.30 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 97.72 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.34 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.04 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4453874.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.81 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.04 %
BPCHG = 0.78
KWCHG = -0.77
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.007728 %

THE CORRECTED GROSS GENERATION IS..... 671.81 MWe

THE CORRECTED NET GENERATION IS..... 641.51 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10350.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10433.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6693.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

09-04-1997 15:43:32

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2650BB

THE AVERAGE GROSS GENERATION IS..... 681.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.73 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 116.65 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.18 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.97 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 94.26 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 33.59 PCT
THE AVERAGE COAL FLOW IS..... 750300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8788.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 21.47 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.07 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 98.61 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.72 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.10 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4484575.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.71 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.91 %
BPCHG = 0.82
KWCHG = -0.81
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008121 %

THE CORRECTED GROSS GENERATION IS..... 675.51 MWe

THE CORRECTED NET GENERATION IS..... 646.11 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10119.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10205.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6593.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:27:27

{650 test above curve}

892.59034
8.1152722
0.0014452852

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2250a

THE AVERAGE GROSS GENERATION IS..... 276.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.60 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.08 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.63 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.44 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.92 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.56 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 87.90 PCT
THE AVERAGE COAL FLOW IS..... 337200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 9052.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.19 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.79 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.33 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.98 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.30 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1809299.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.30 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.14 %
BPCHG = 1.30
KWCHG = -1.29
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012874 %

THE CORRECTED GROSS GENERATION IS..... 272.49 MWe

THE CORRECTED NET GENERATION IS..... 248.89 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12093.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12263.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3052.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:28:03

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2250b

THE AVERAGE GROSS GENERATION IS..... 275.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 23.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.06 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.32 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.13 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.61 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.90 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.21 PCT
THE AVERAGE COAL FLOW IS..... 339100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8887.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.19 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.72 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.28 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 91.69 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.29 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1801314.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -11.42 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -10.26 %
BPCHG = 1.31
KWCHG = -1.29
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012926 %

THE CORRECTED GROSS GENERATION IS..... 271.49 MWe

THE CORRECTED NET GENERATION IS..... 248.29 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11968.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12137.3 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3013.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:28:22

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2350a

THE AVERAGE GROSS GENERATION IS..... 381.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.69 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.88 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.94 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.48 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 84.30 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.85 PCT
THE AVERAGE COAL FLOW IS..... 443900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8835.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.94 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.91 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.91 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.94 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.69 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2506417.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.83 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.83 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 381.00 MWe

THE CORRECTED NET GENERATION IS..... 354.70 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11056.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11056.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3921.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:28:32

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2350b

THE AVERAGE GROSS GENERATION IS..... 386.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 24.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.66 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.52 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.59 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.27 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 83.97 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.20 PCT
THE AVERAGE COAL FLOW IS..... 447800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8834.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 12.93 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.89 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.89 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.59 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.66 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2534227.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.87 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.87 %
BPCHG = -0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 386.00 MWe

THE CORRECTED NET GENERATION IS..... 361.10 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10955.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10955.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3955.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:28:41

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2450a

THE AVERAGE GROSS GENERATION IS..... 475.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.50 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.55 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 104.13 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.93 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.87 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.17 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 69.63 PCT
THE AVERAGE COAL FLOW IS..... 554700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8639.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.20 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.78 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.52 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.68 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.99 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3058118.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.23 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.90 %
BPCHG = 1.43
KWCHG = -1.41
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014064 %

THE CORRECTED GROSS GENERATION IS..... 468.41 MWe

THE CORRECTED NET GENERATION IS..... 442.91 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10660.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10819.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4792.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:28:54

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2450b

THE AVERAGE GROSS GENERATION IS..... 473.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.51 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 103.56 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.52 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.56 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.48 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 70.81 PCT
THE AVERAGE COAL FLOW IS..... 548000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8581.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.04 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.69 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.44 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.27 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.94 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3042774.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.38 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.06 %
BPCHG = 1.41
KWCHG = -1.39
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013922 %

THE CORRECTED GROSS GENERATION IS..... 466.51 MWe

THE CORRECTED NET GENERATION IS..... 439.41 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10545.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10701.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4702.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:29:04

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2550a

THE AVERAGE GROSS GENERATION IS..... 578.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.10 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.85 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.41 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 89.30 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.54 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.45 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.32 PCT
THE AVERAGE COAL FLOW IS..... 645500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8744.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.11 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.51 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.90 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.69 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.21 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3733422.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.32 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.49 %
BPCHG = 0.87
KWCHG = -0.86
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008584 %

THE CORRECTED GROSS GENERATION IS..... 573.08 MWe

THE CORRECTED NET GENERATION IS..... 544.98 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10264.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10356.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5644.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:29:15

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2550b

THE AVERAGE GROSS GENERATION IS..... 576.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.94 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 108.63 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.51 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.26 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.44 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 81.60 PCT
THE AVERAGE COAL FLOW IS..... 643800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8825.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.12 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.74 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.09 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.87 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.32 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3728412.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.11 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.23 %
BPCHG = 0.92
KWCHG = -0.92
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009163 %

THE CORRECTED GROSS GENERATION IS..... 570.77 MWe

THE CORRECTED NET GENERATION IS..... 544.47 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10335.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10435.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5681.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:29:28

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2650a

THE AVERAGE GROSS GENERATION IS..... 680.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.90 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.76 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.46 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.89 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 60.43 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 68.92 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 61.44 PCT
THE AVERAGE COAL FLOW IS..... 788600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8704.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.57 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 84.32 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.37 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.94 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.73 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4390923.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.62 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.77 %
BPCHG = 1.92
KWCHG = -1.88
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.018847 %

THE CORRECTED GROSS GENERATION IS..... 667.42 MWe

THE CORRECTED NET GENERATION IS..... 637.52 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10558.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10766.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6864.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:29:38

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2650b

THE AVERAGE GROSS GENERATION IS..... 681.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.70 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.73 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.02 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.29 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 59.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 65.10 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 70.49 PCT
THE AVERAGE COAL FLOW IS..... 796600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8515.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.73 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 83.35 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.81 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.75 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.73 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4396335.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.65 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.76 %
BPCHG = 1.96
KWCHG = -1.92
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.019234 %

THE CORRECTED GROSS GENERATION IS..... 668.15 MWe

THE CORRECTED NET GENERATION IS..... 637.45 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10430.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10640.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6783.0 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:29:48

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2750a

THE AVERAGE GROSS GENERATION IS..... 774.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 33.20 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.11 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.62 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.45 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 76.83 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 82.44 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.11 PCT
THE AVERAGE COAL FLOW IS..... 880000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8645.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 24.17 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 94.05 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.62 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.03 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.18 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5199561.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.71 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.59 %
BPCHG = 0.12
KWCHG = -0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001173 %

THE CORRECTED GROSS GENERATION IS..... 773.09 MWe

THE CORRECTED NET GENERATION IS..... 739.89 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10269.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10282.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7607.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:30:10

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2750b

THE AVERAGE GROSS GENERATION IS..... 781.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 33.30 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.22 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 120.61 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.24 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.68 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 85.84 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 73.50 PCT
THE AVERAGE COAL FLOW IS..... 893300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8623.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 24.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.40 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.85 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.69 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.16 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5263957.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.52 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.62 %
BPCHG = -0.11
KWCHG = 0.11
THE BACKPRESSURE CORRECTION FACTOR IS..... 0.998912 %

THE CORRECTED GROSS GENERATION IS..... 781.85 MWe

THE CORRECTED NET GENERATION IS..... 748.55 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10302.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10290.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7702.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:30:22

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2842a

THE AVERAGE GROSS GENERATION IS..... 893.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 38.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.32 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.07 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 83.83 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 57.55 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 63.52 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 69.69 PCT
THE AVERAGE COAL FLOW IS..... 1028200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8519.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.24 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 83.60 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.19 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.42 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.50 IN-HG
THE TURBINE THROTTLE FLOW IS..... 6037571.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.44 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.00 %
BPCHG = 1.47
KWCHG = -1.44
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014447 %

THE CORRECTED GROSS GENERATION IS..... 880.28 MWe

THE CORRECTED NET GENERATION IS..... 842.28 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10244.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10399.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8759.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-15-1997 16:30:33

HEAT RATE CORRECTIONS FOR INDEPENDENCE UNIT TWO

MEASURED TEST INPUTS FROM FILE 2842b

THE AVERAGE GROSS GENERATION IS..... 887.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 36.40 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.35 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.99 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 84.20 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 59.51 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 67.42 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 63.03 PCT
THE AVERAGE COAL FLOW IS..... 1031300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8454.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.79 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 85.10 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 95.62 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.72 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.41 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5994412.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.44 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.12 %
BPCHG = 1.34
KWCHG = -1.32
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013209 %

THE CORRECTED GROSS GENERATION IS..... 875.44 MWe

THE CORRECTED NET GENERATION IS..... 839.04 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10250.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10391.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8718.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

08-27-1998 00:18:53

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1160a.cor

THE AVERAGE GROSS GENERATION IS..... 181.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.70 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.23 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.98 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.15 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 81.35 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 83.11 PCT
THE AVERAGE COAL FLOW IS..... 252400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8922.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.25 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 93.16 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.40 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.21 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.72 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1274366.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -9.11 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.00 %
BPCHG = 0.12
KWCHG = -0.12
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001241 %

THE CORRECTED GROSS GENERATION IS..... 180.78 MWe

THE CORRECTED NET GENERATION IS..... 154.78 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14528.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14549.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2251.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:19:05

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1160b.cor

THE AVERAGE GROSS GENERATION IS..... 180.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.70 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.53 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.23 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 75.22 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.79 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.78 PCT
THE AVERAGE COAL FLOW IS..... 252300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8779.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 8.30 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.42 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.61 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.42 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.87 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1267993.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -9.12 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -8.05 %
BPCHG = 1.17
KWCHG = -1.16
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011607 %

THE CORRECTED GROSS GENERATION IS..... 177.93 MWe

THE CORRECTED NET GENERATION IS..... 151.93 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14382.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14578.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2214.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:19:23

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1225a.cor

THE AVERAGE GROSS GENERATION IS..... 258.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.83 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 100.94 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.93 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.71 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 80.84 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.70 PCT
THE AVERAGE COAL FLOW IS..... 323700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8670.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.01 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.66 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.80 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.08 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.00 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1770598.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.53 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.67 %
BPCHG = 0.93
KWCHG = -0.92
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009232 %

THE CORRECTED GROSS GENERATION IS..... 255.64 MWe

THE CORRECTED NET GENERATION IS..... 230.64 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12045.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12168.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2806.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:19:31

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1225b.cor

THE AVERAGE GROSS GENERATION IS..... 262.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.83 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 101.30 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.54 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.59 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 81.67 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 72.49 PCT
THE AVERAGE COAL FLOW IS..... 324800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8663.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 10.76 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.95 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.05 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.65 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.00 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1795092.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -7.49 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.66 %
BPCHG = 0.90
KWCHG = -0.89
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008940 %

THE CORRECTED GROSS GENERATION IS..... 259.68 MWe

THE CORRECTED NET GENERATION IS..... 234.68 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11872.3 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11989.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2813.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:19:48

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1300a.cor

THE AVERAGE GROSS GENERATION IS..... 335.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.49 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.91 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 87.92 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.61 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.63 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.90 PCT
THE AVERAGE COAL FLOW IS..... 393800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8947.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 5748106.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.99 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.95 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.52 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.49 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.83 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2210191.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.26 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.81 %
BPCHG = 1.58
KWCHG = -1.56
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.015577 %

THE CORRECTED GROSS GENERATION IS..... 329.86 MWe

THE CORRECTED NET GENERATION IS..... 302.86 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11439.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11633.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3523.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:19:56

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1300b.cor

THE AVERAGE GROSS GENERATION IS..... 332.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.52 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 99.63 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.03 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.41 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.12 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 87.09 PCT
THE AVERAGE COAL FLOW IS..... 392700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8898.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.60 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 87.99 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.45 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.50 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.93 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2195003.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.17 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -6.40 %
BPCHG = 1.92
KWCHG = -1.89
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.018867 %

THE CORRECTED GROSS GENERATION IS..... 325.85 MWe

THE CORRECTED NET GENERATION IS..... 298.85 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11456.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11692.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3494.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:20:09

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1375a.cor

THE AVERAGE GROSS GENERATION IS..... 405.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.86 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.94 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.10 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.11 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.25 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.94 PCT
THE AVERAGE COAL FLOW IS..... 465700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8675.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.84 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.26 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.92 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.76 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.08 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2667388.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.90 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.11 %
BPCHG = 0.84
KWCHG = -0.83
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008291 %

THE CORRECTED GROSS GENERATION IS..... 401.67 MWe

THE CORRECTED NET GENERATION IS..... 373.67 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10716.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10811.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4039.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:20:23

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1375b.cor

THE AVERAGE GROSS GENERATION IS..... 400.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.93 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.09 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.43 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.80 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.73 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 79.60 PCT
THE AVERAGE COAL FLOW IS..... 459200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8720.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.66 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.22 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.88 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.10 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.15 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2643639.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.68 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.88 %
BPCHG = 0.85
KWCHG = -0.84
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008381 %

THE CORRECTED GROSS GENERATION IS..... 396.68 MWe

THE CORRECTED NET GENERATION IS..... 368.68 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10764.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10861.1 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4004.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:20:46

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1450a.cor

THE AVERAGE GROSS GENERATION IS..... 471.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.06 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 107.11 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.71 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.51 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.38 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 80.01 PCT
THE AVERAGE COAL FLOW IS..... 516700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8710.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.40 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.90 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.98 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.79 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.24 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3080215.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.65 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.11 %
BPCHG = 0.57
KWCHG = -0.57
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005696 %

THE CORRECTED GROSS GENERATION IS..... 468.33 MWe

THE CORRECTED NET GENERATION IS..... 440.33 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10159.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10220.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4500.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:21:07

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1450b.cor

THE AVERAGE GROSS GENERATION IS..... 473.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.03 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.32 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.26 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.72 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.07 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 81.66 PCT
THE AVERAGE COAL FLOW IS..... 520700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8781.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.06 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.24 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.89 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.91 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.26 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3089263.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.73 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.04 %
BPCHG = 0.73
KWCHG = -0.73
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.007275 %

THE CORRECTED GROSS GENERATION IS..... 469.58 MWe

THE CORRECTED NET GENERATION IS..... 441.58 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10274.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10354.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4572.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:21:20

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1525a.cor

THE AVERAGE GROSS GENERATION IS..... 554.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.00 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.88 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.88 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.60 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 72.67 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.72 PCT
THE AVERAGE COAL FLOW IS..... 611900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8750.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.00 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.34 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.76 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.30 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.38 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3592000.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.17 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -3.16 %
BPCHG = 1.05
KWCHG = -1.04
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010363 %

THE CORRECTED GROSS GENERATION IS..... 548.32 MWe

THE CORRECTED NET GENERATION IS..... 518.32 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10217.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10329.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5354.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:21:32

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1525b.cor

THE AVERAGE GROSS GENERATION IS..... 556.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.10 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.93 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 88.91 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.50 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 73.50 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 90.16 PCT
THE AVERAGE COAL FLOW IS..... 611100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8779.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.02 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.87 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.74 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 92.78 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.44 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3615082.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.89 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.99 %
BPCHG = 0.94
KWCHG = -0.93
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009305 %

THE CORRECTED GROSS GENERATION IS..... 550.87 MWe

THE CORRECTED NET GENERATION IS..... 521.87 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10180.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10280.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5364.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:21:47

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1600a.cor

THE AVERAGE GROSS GENERATION IS..... 628.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.54 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 111.30 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.63 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.08 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.73 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 87.89 PCT
THE AVERAGE COAL FLOW IS..... 701400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8459.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.67 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.72 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.94 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.85 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.86 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4118470.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.37 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.59 %
BPCHG = 0.79
KWCHG = -0.79
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.007879 %

THE CORRECTED GROSS GENERATION IS..... 623.09 MWe

THE CORRECTED NET GENERATION IS..... 591.09 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9954.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10037.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5933.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:21:54

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1600b.cor

THE AVERAGE GROSS GENERATION IS..... 630.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 32.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.53 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 111.37 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.47 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.33 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.19 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.91 PCT
THE AVERAGE COAL FLOW IS..... 701600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8447.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.90 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.21 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.99 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.26 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.90 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4130546.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.38 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.48 %
BPCHG = 0.93
KWCHG = -0.92
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009195 %

THE CORRECTED GROSS GENERATION IS..... 624.26 MWe

THE CORRECTED NET GENERATION IS..... 592.26 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9910.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10006.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5926.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:22:05

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1680a.cor

THE AVERAGE GROSS GENERATION IS..... 716.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 34.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.84 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 115.04 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.69 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.78 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.17 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 85.22 PCT
THE AVERAGE COAL FLOW IS..... 783400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8589.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.35 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.71 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.22 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.20 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.10 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4737466.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.38 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.84 %
BPCHG = 0.55
KWCHG = -0.54
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005438 %

THE CORRECTED GROSS GENERATION IS..... 712.13 MWe

THE CORRECTED NET GENERATION IS..... 678.13 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9866.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 9922.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6728.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:22:13

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1680b.cor

THE AVERAGE GROSS GENERATION IS..... 710.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 34.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.69 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 114.40 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.36 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.35 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.41 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 86.37 PCT
THE AVERAGE COAL FLOW IS..... 788600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8570.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.04 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.01 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.15 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.50 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.00 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4680241.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.71 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.07 %
BPCHG = 0.65
KWCHG = -0.65
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.006474 %

THE CORRECTED GROSS GENERATION IS..... 705.43 MWe

THE CORRECTED NET GENERATION IS..... 671.43 MWe

THE UNCORRECTED NET HEAT RATE IS..... 9997.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10065.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6758.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:22:26

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1760a.cor

THE AVERAGE GROSS GENERATION IS..... 823.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.76 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 122.86 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 96.17 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 77.11 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 90.74 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 54.08 PCT
THE AVERAGE COAL FLOW IS..... 904300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8778.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.69 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 95.46 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.14 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.85 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.84 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5644646.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.45 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.60 %
BPCHG = 0.15
KWCHG = -0.15
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.001458 %

THE CORRECTED GROSS GENERATION IS..... 821.80 MWe

THE CORRECTED NET GENERATION IS..... 782.80 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10124.9 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10140.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7937.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

08-27-1998 00:22:34

HEAT RATE CORRECTIONS FOR Independence Unit One

MEASURED TEST INPUTS FROM FILE 1760b.cor

THE AVERAGE GROSS GENERATION IS..... 819.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.89 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 123.48 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 97.21 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 78.10 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 95.05 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 46.08 PCT
THE AVERAGE COAL FLOW IS..... 903700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8788.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.27 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 96.89 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 96.89 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.21 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.89 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5628082.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... 0.69 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.69 %
BPCHG = 0.00
KWCHG = 0.00
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.000000 %

THE CORRECTED GROSS GENERATION IS..... 819.00 MWe

THE CORRECTED NET GENERATION IS..... 780.00 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10181.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10181.7 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7941.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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ENTERGY

Inter-Office Correspondence

TO: **Etienne Senac**
Mike Kolbus
Tom Schnatz
George Eubanks
Al Ralston
Tim Gautreau
Henry Thompson

FROM: **Pat Klepper**

DATE: **October 7, 1998**
(Revised) October 8, 1998

SUBJECT: **1998 Independence - Heat Rate Test Results**

Heat rate tests were performed on both Independence Units starting July 21 and ending August 27. Co-owners were notified prior to the testing and representatives from Arkansas Electric Cooperative were present to observe the testing. Testing was performed in an unbiased manner.

Unit one was tested from 160 net MW through 780 net MW and Unit Two was tested from 160 net MW through 780 net MW. Both units were load limitted due to overloading of the ID fans and fan motors. When compared to last year, Unit One's heat rate improved at 350 and higher net MW while Unit Two's heat rate suffered at loads above ≈400 net MW.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

The heat input at each of the corrected test loads is shown in the following table.

Unit 1 (net MW)	Unit 1 (heat input)	Unit 2 (net MW)	Unit 2 (heat input)
151.93	2231.60	145.93	2118.90
154.78	2268.90	147.51	2119.50
230.64	2809.10	217.12	2733.60
234.68	2816.30	220.14	2738.80
298.85	3518.30	298.04	3401.60
302.86	3547.50	299.64	3490.90
368.68	4033.90	378.29	4197.60
373.67	4070.30	380.69	4188.10
440.33	4513.50	445.87	4737.10
441.58	4585.40	446.94	4719.70
518.32	5369.90	519.05	5420.80
521.87	5380.60	519.16	5424.70
591.09	5956.00	593.53	6332.90
592.26	5949.20	595.69	6255.10
671.43	6784.00	671.78	7061.50
678.13	6754.40	672.84	7101.20
780.00	7975.10	753.35	7975.00
782.80	7972.20	753.44	7951.50
		807.80	8533.10
		808.62	8635.90

The coefficients for the 1998 heat rate curves are:

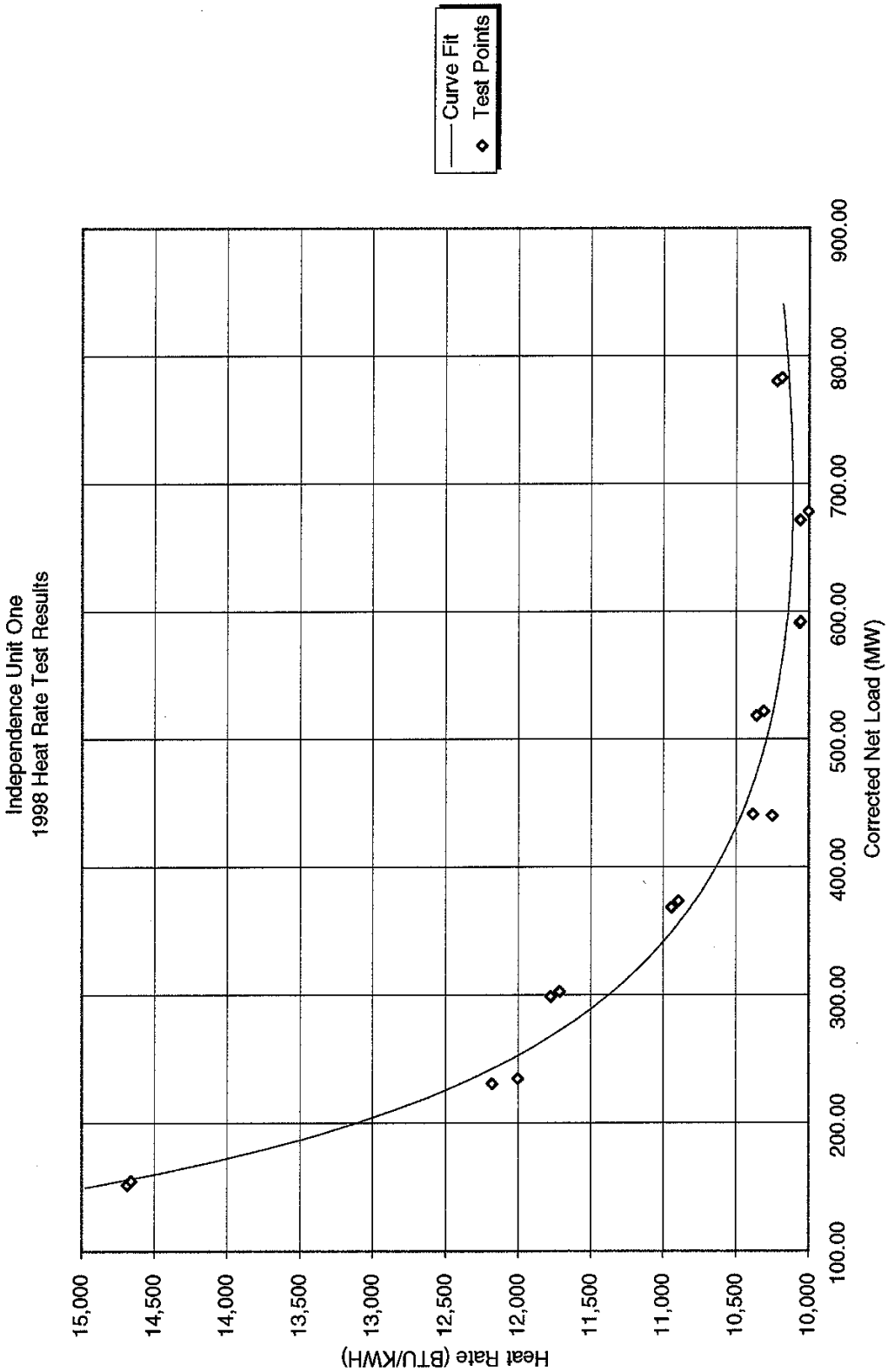
Term	Unit 1	Unit 2
X^2	0.0025087	0.002637
X^1	6.6535577	7.226294
X^0	1191.3393000	1023.3061

I recommend that these results be implemented for economic dispatch and co-owner billing.

The complete results are presented as charts in the EXCEL spreadsheet ***"ISHR1998.XLS"*** which is provided as an attachment to this memo.

cc: Roger Lawson
David Harris A.E.C.C.

Claim Withdrawn. Contains No CBI. 07/11/2016_YD



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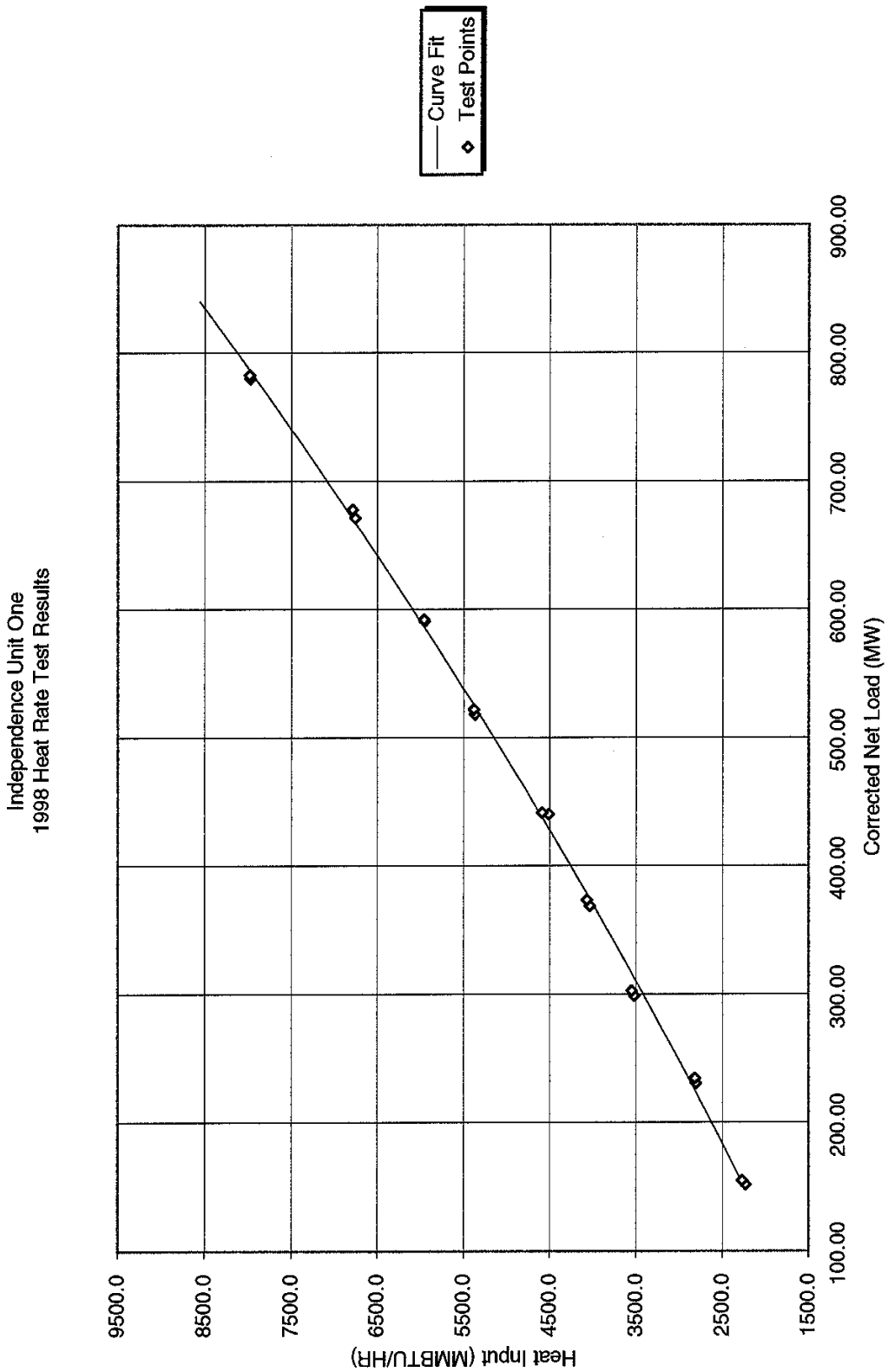

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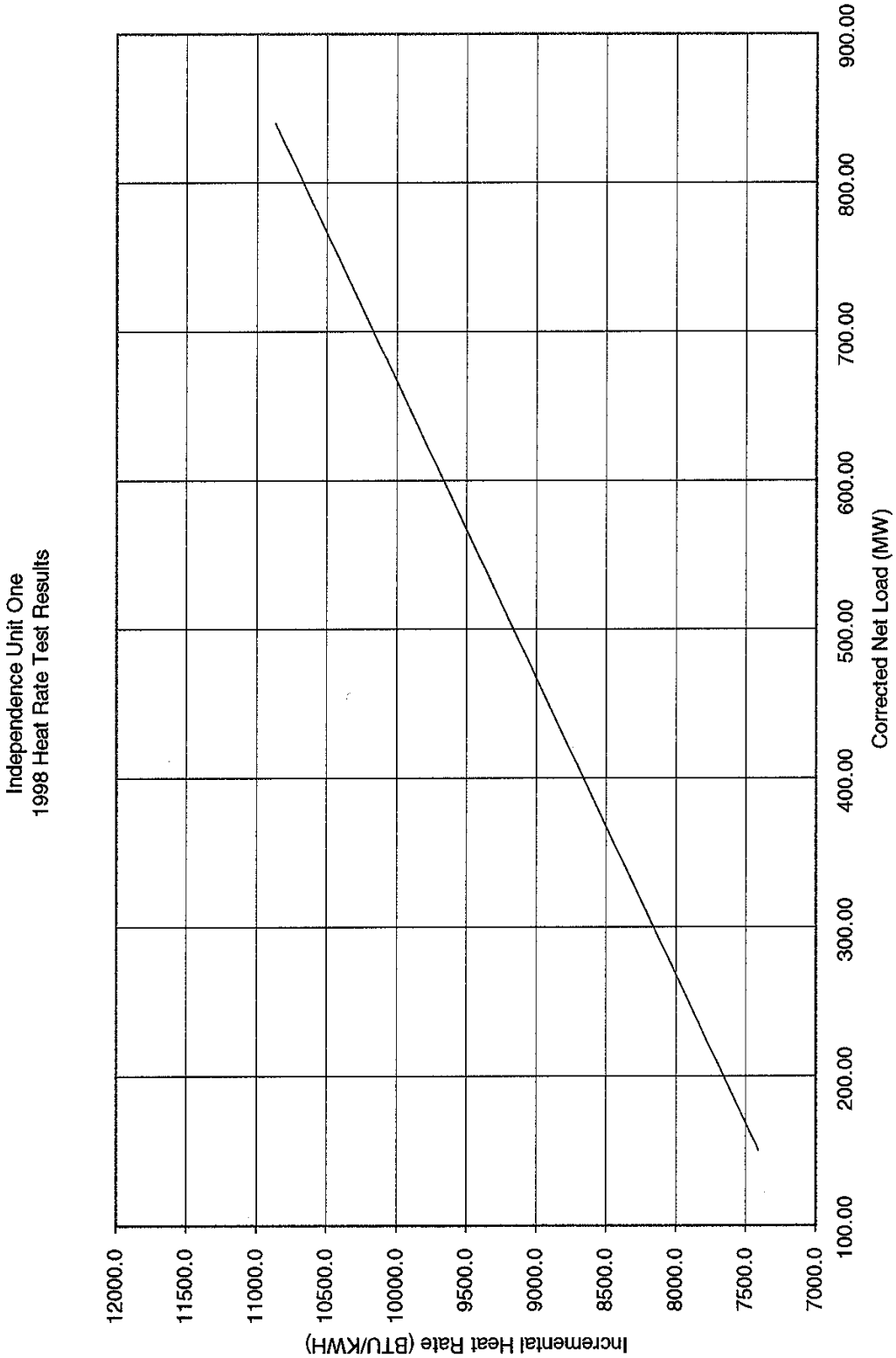

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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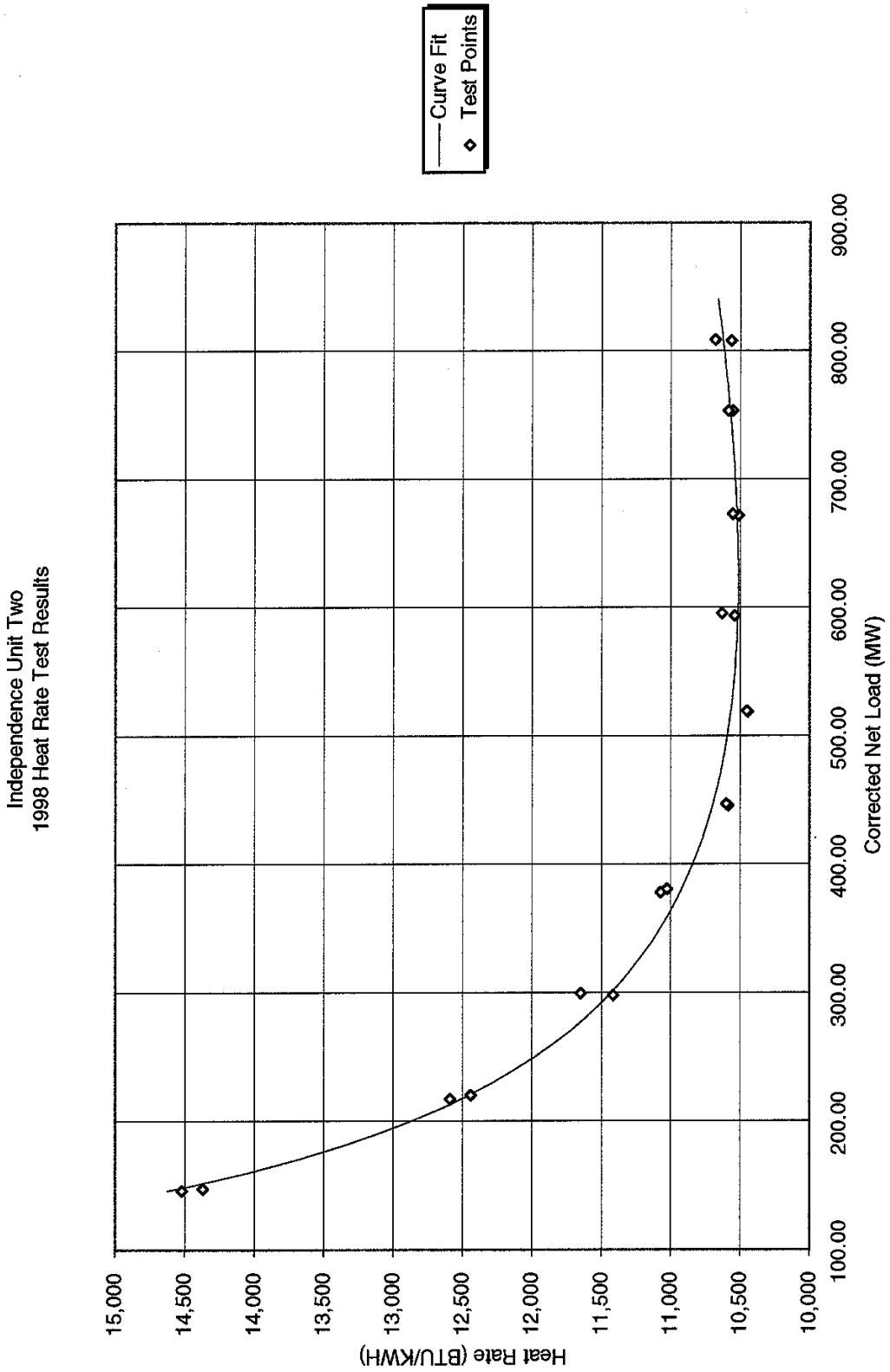

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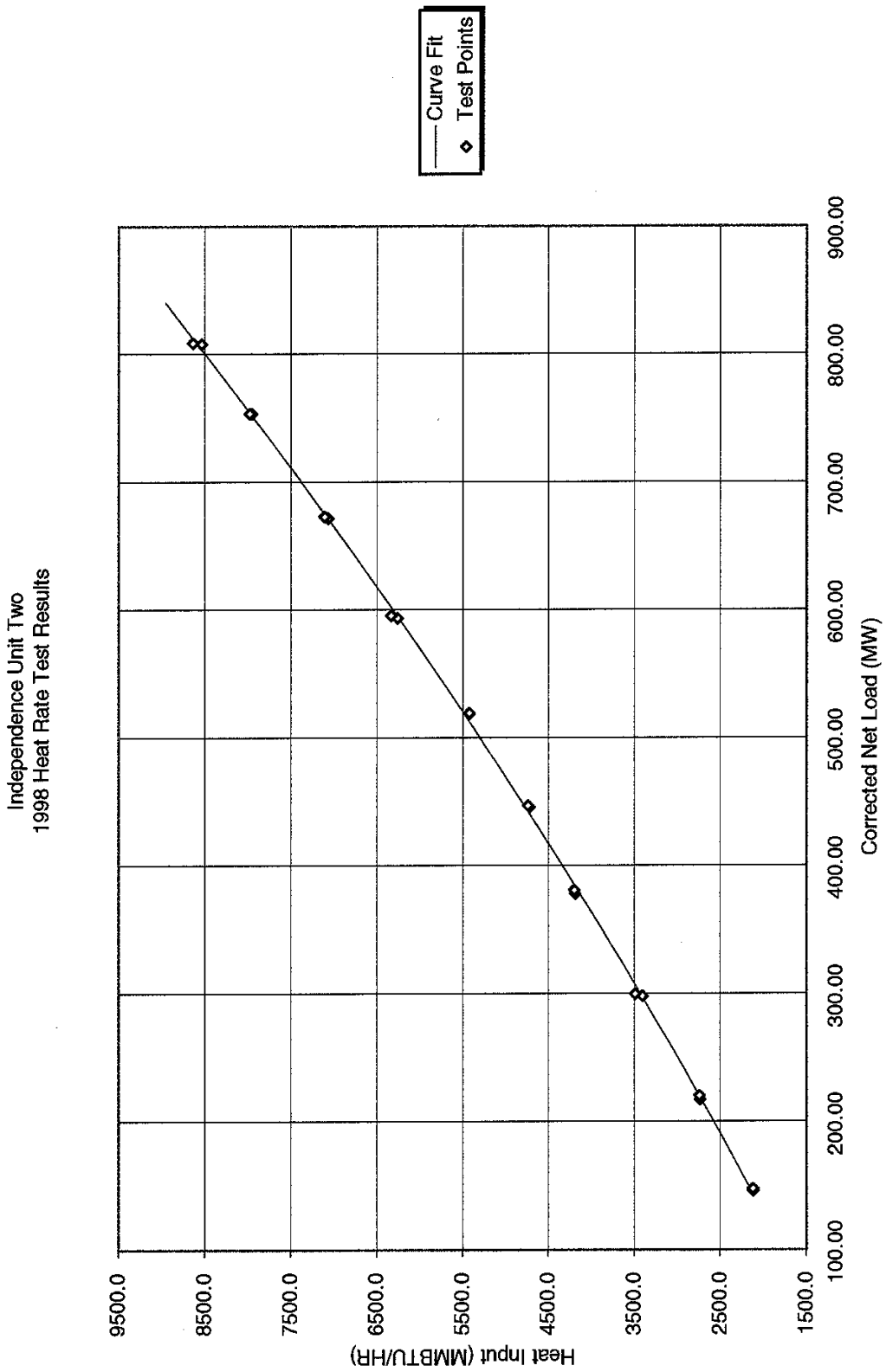

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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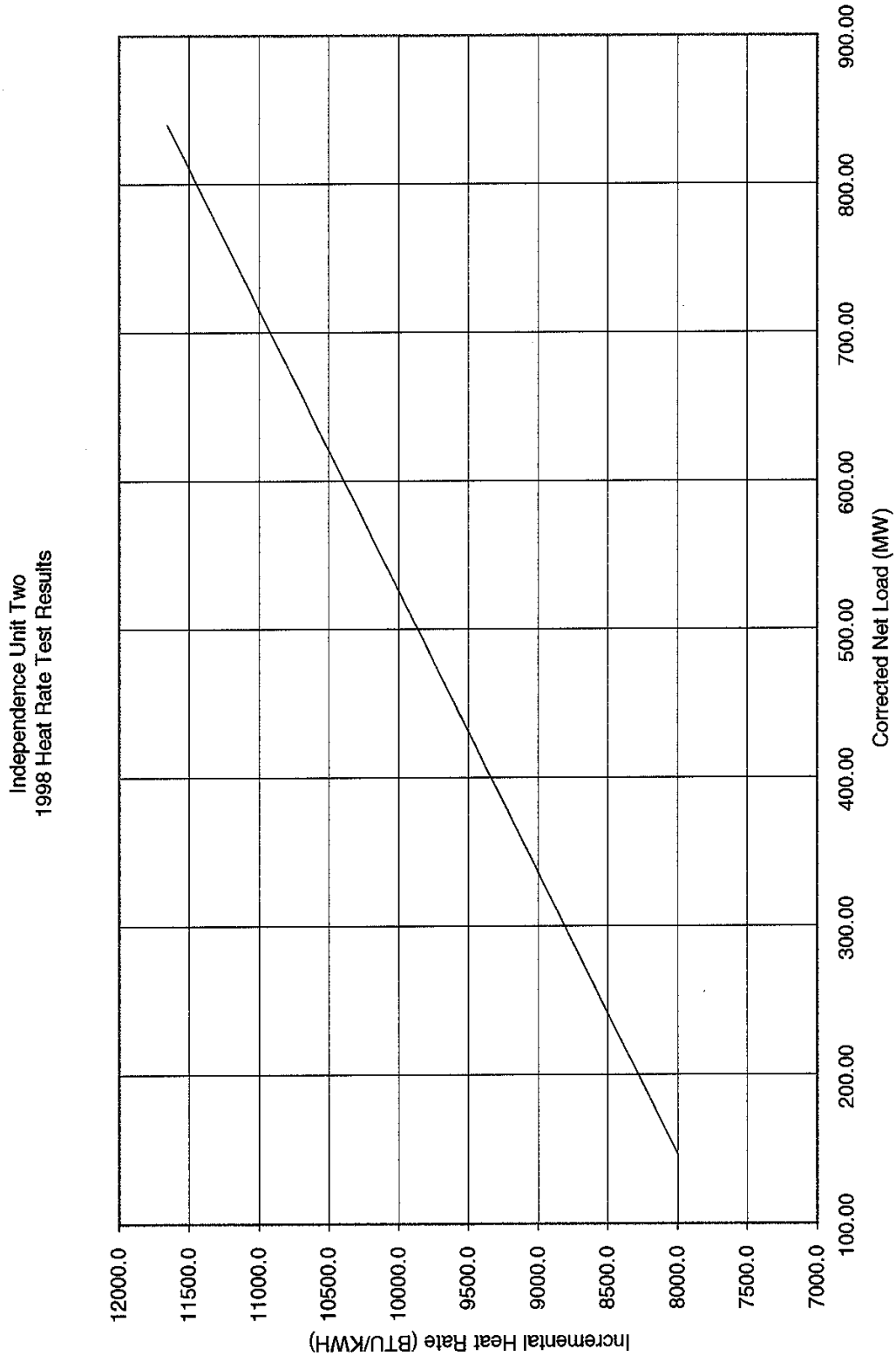

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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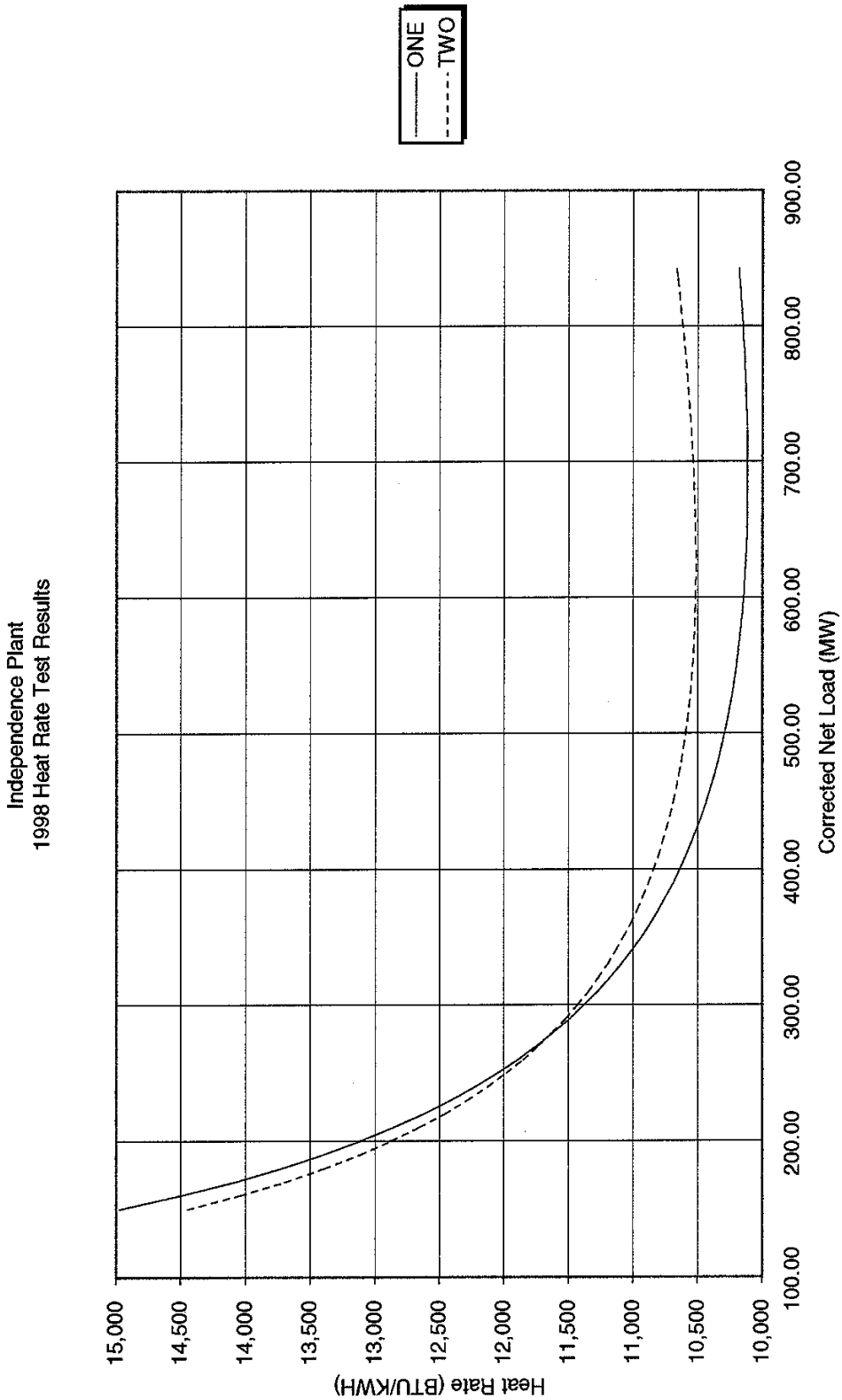

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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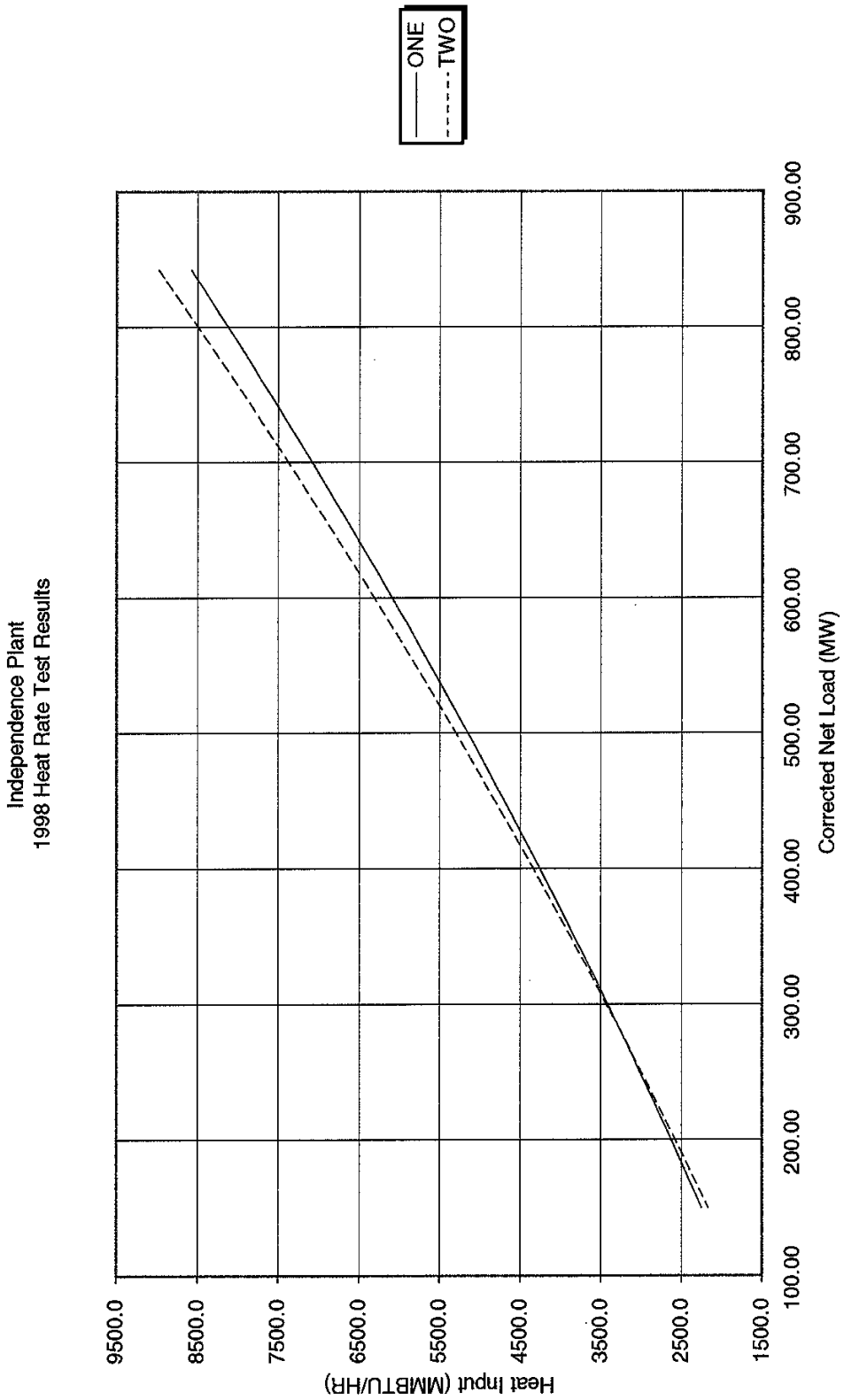

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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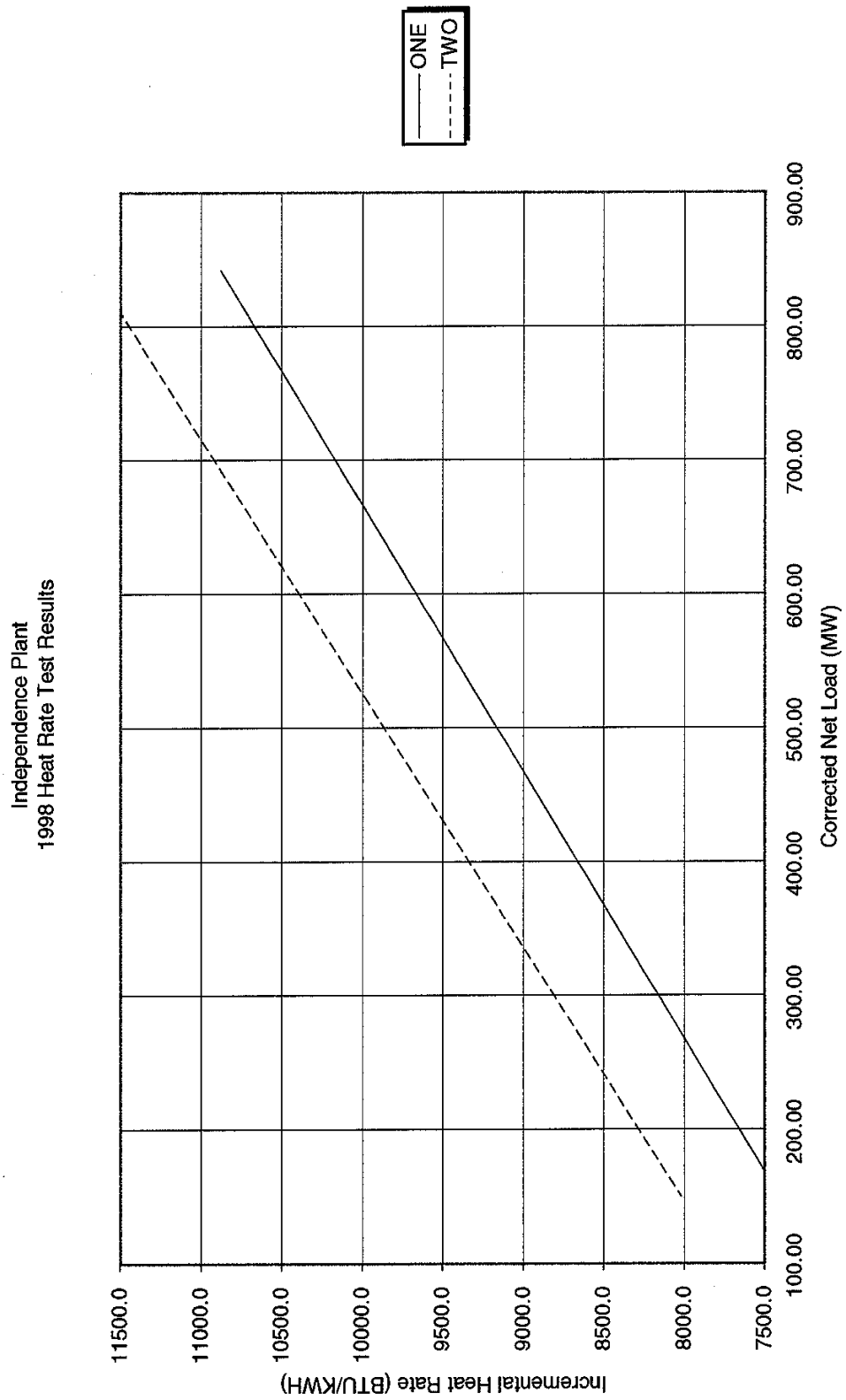

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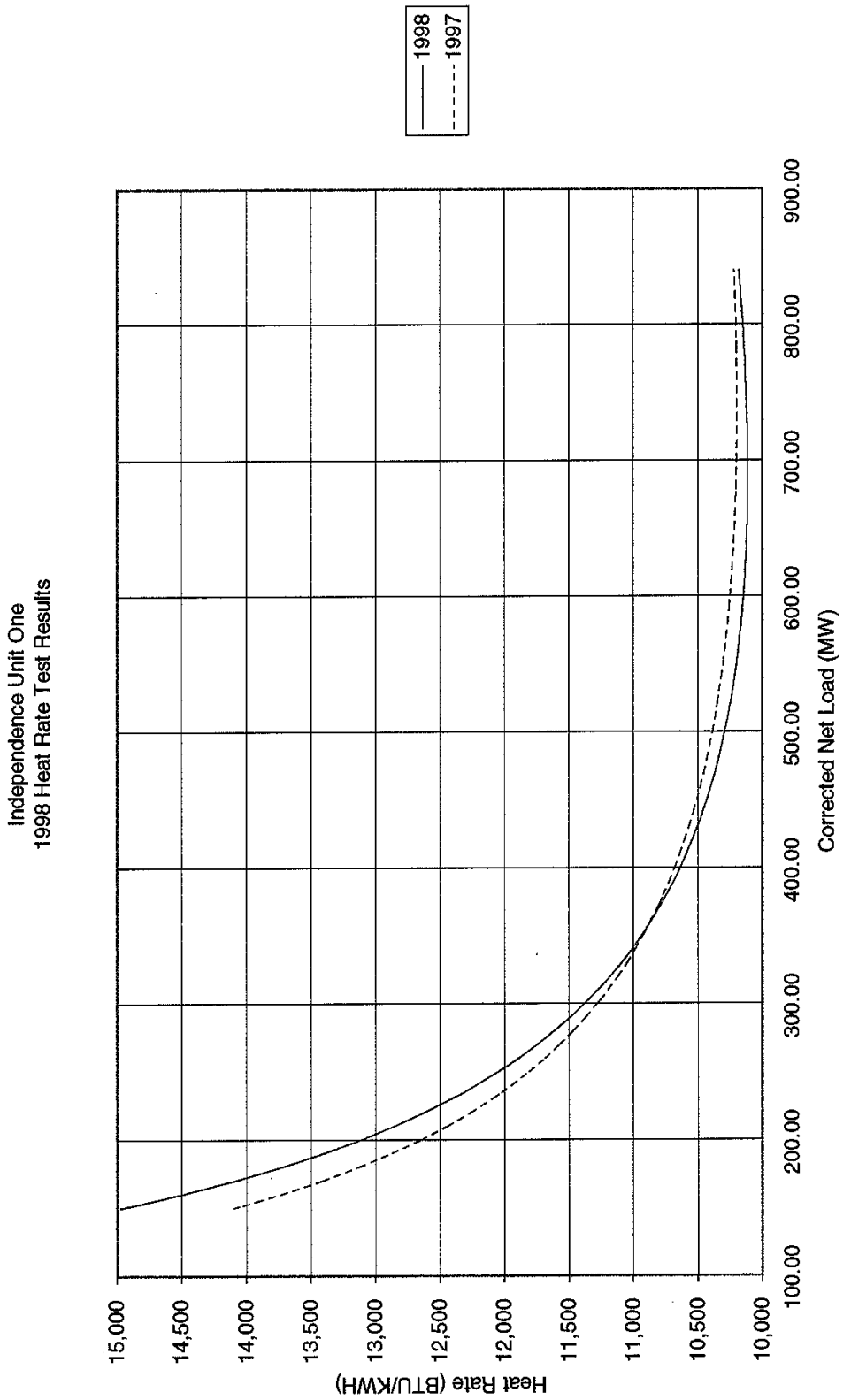

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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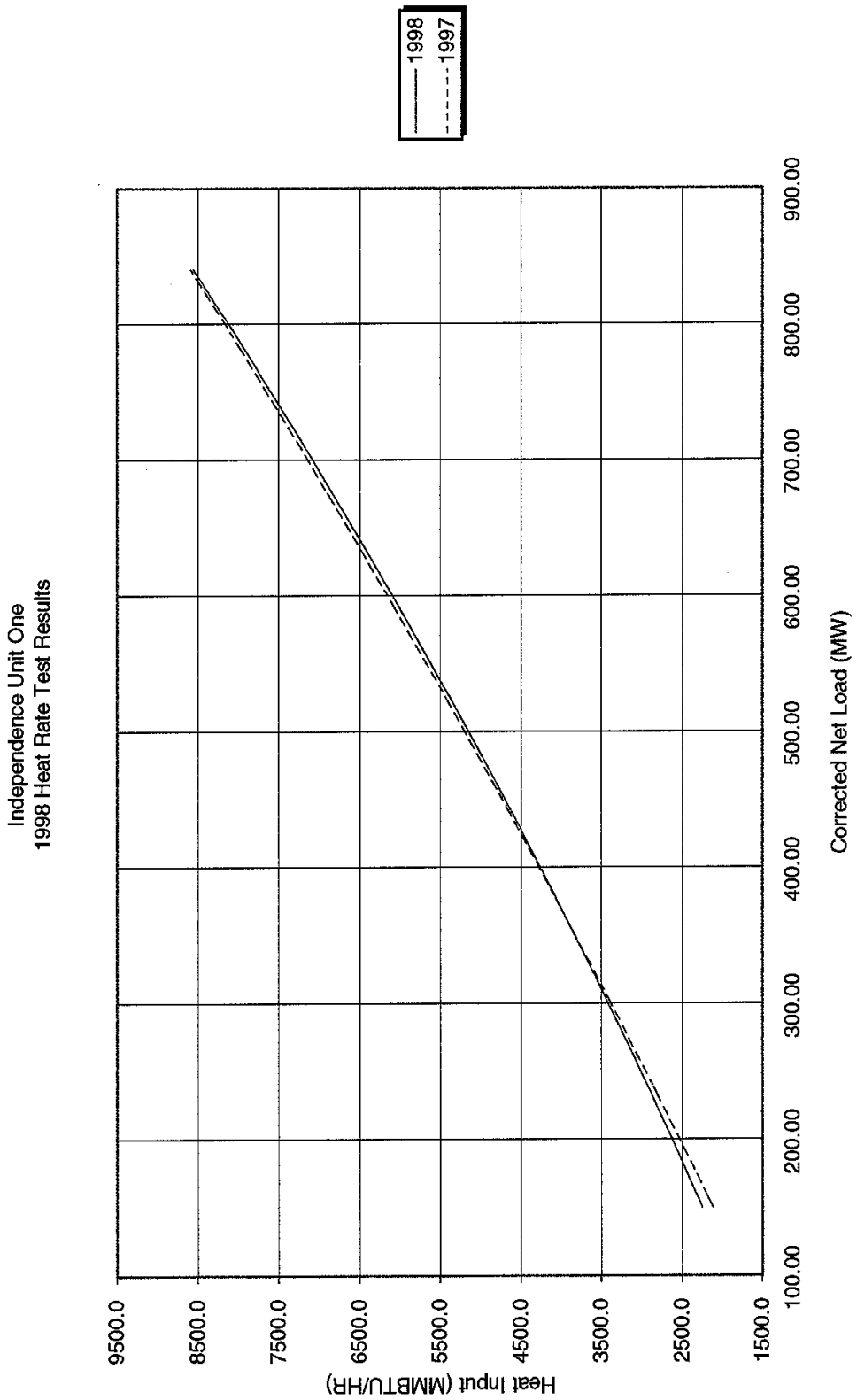

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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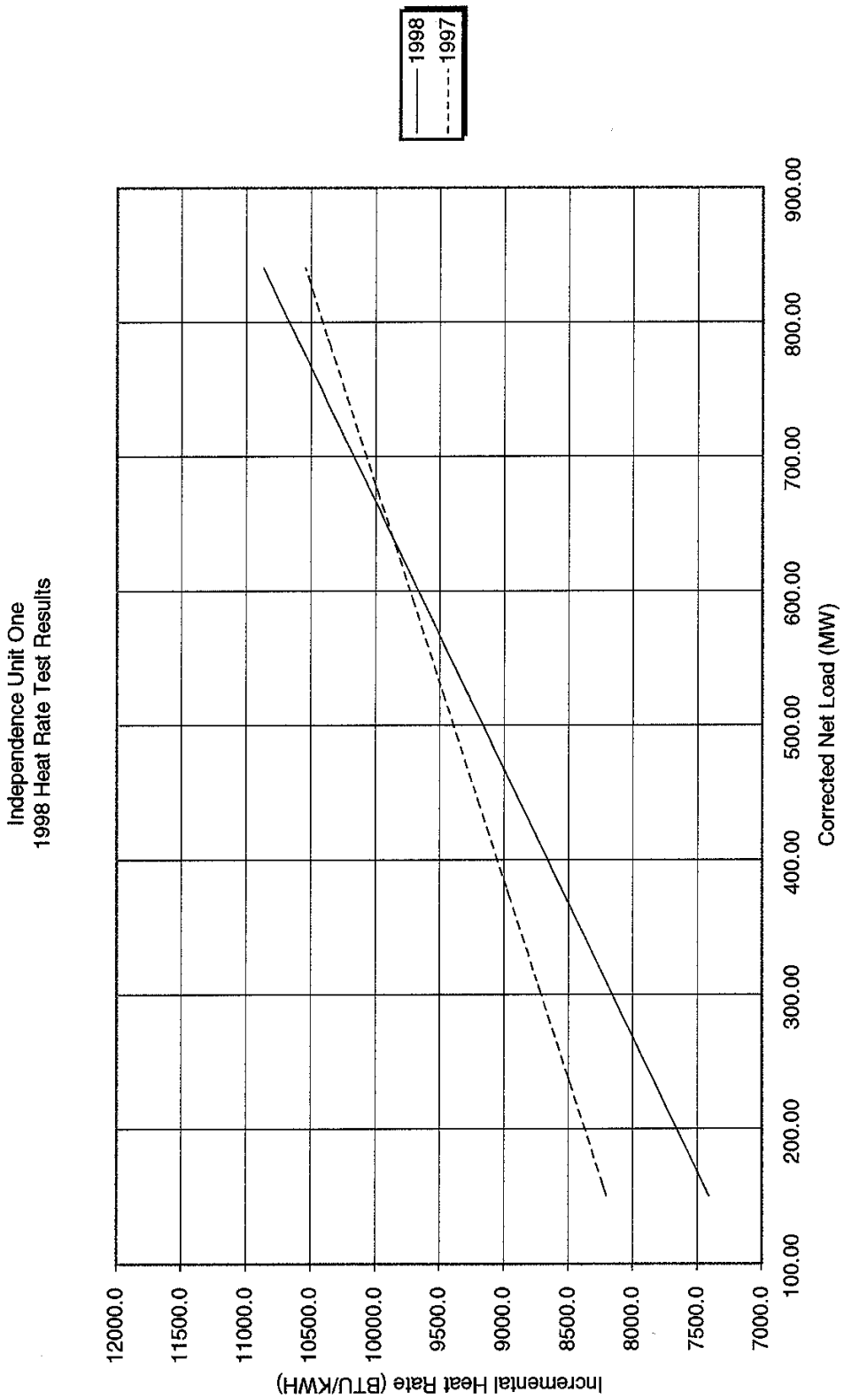

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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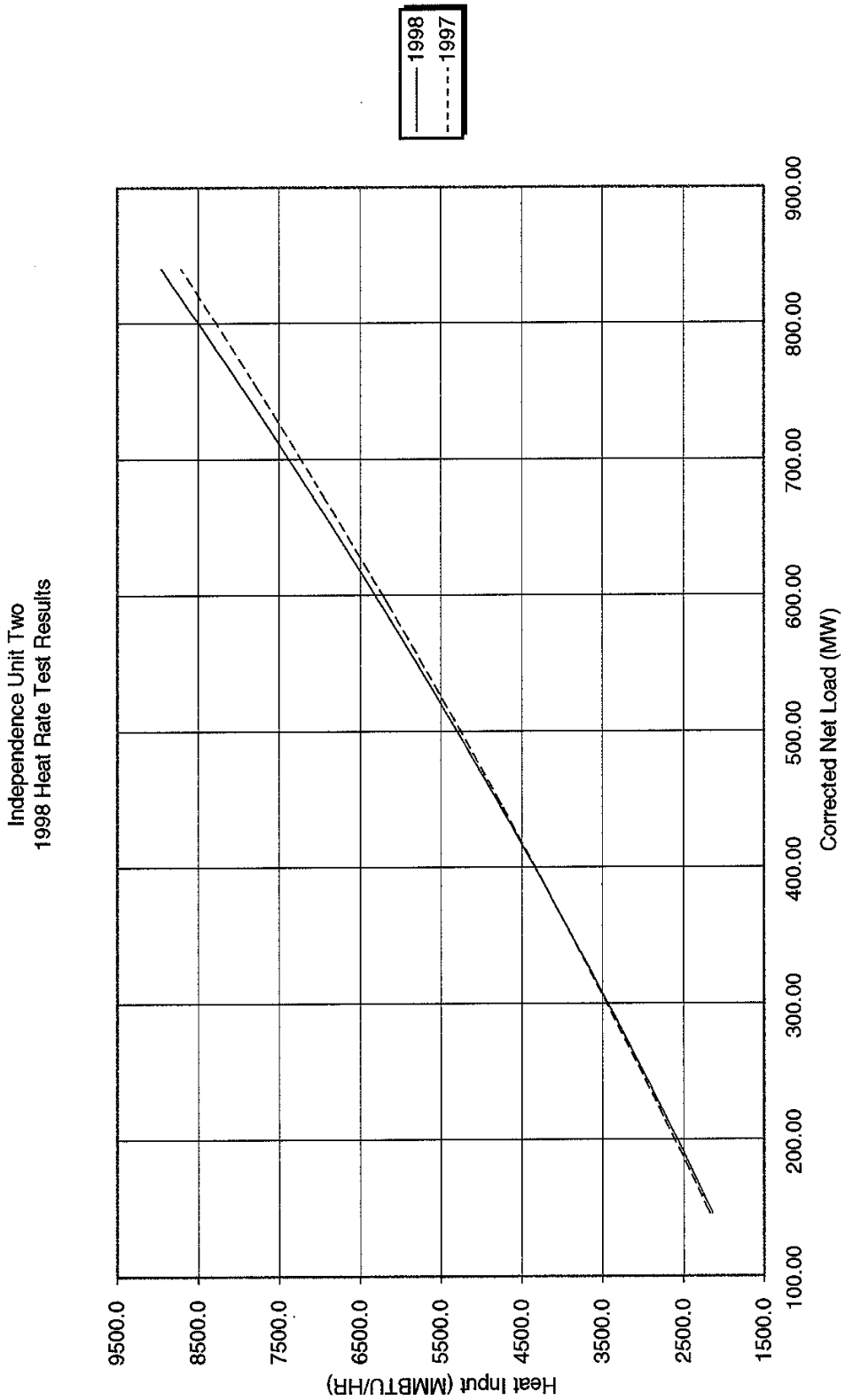

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

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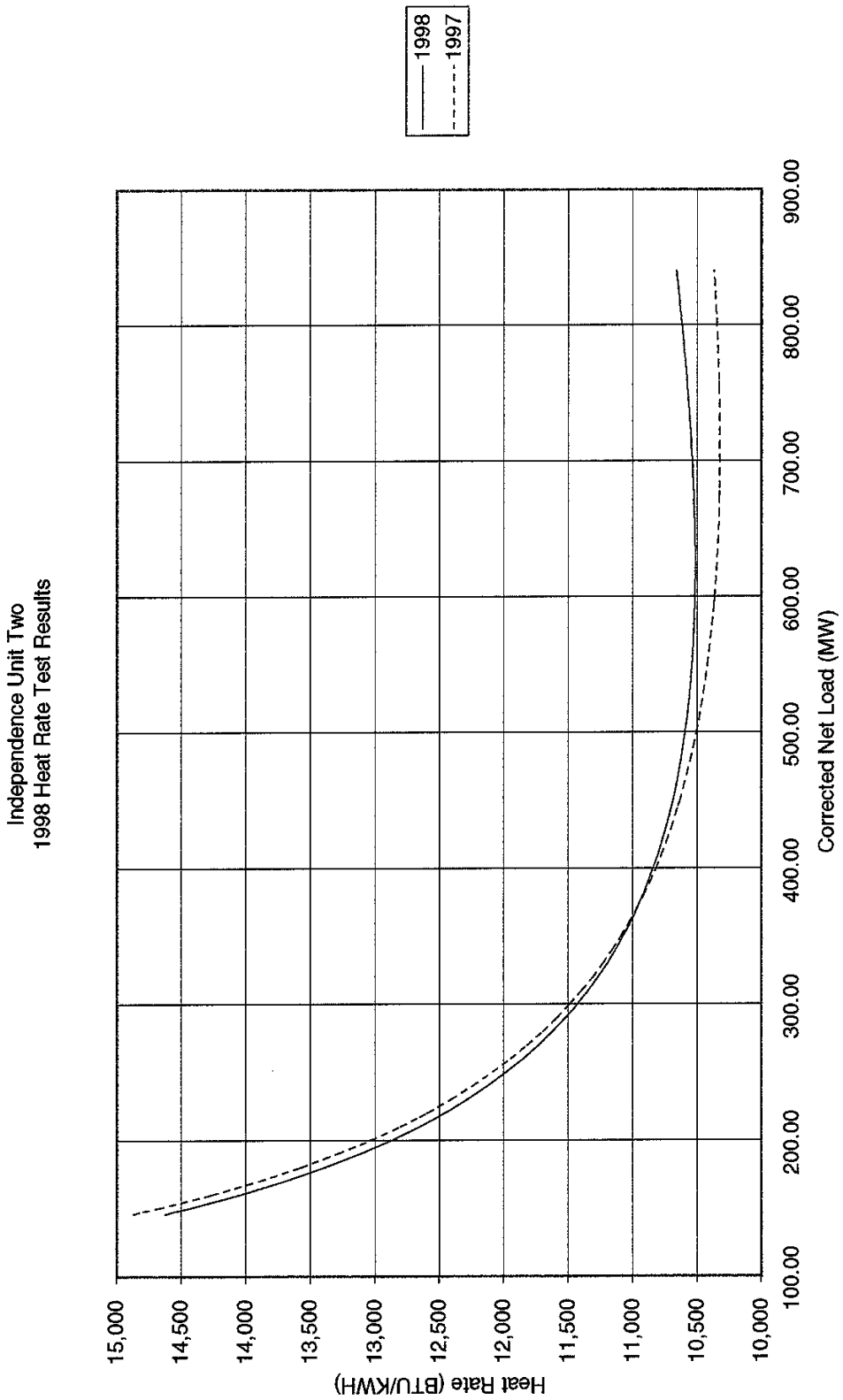

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

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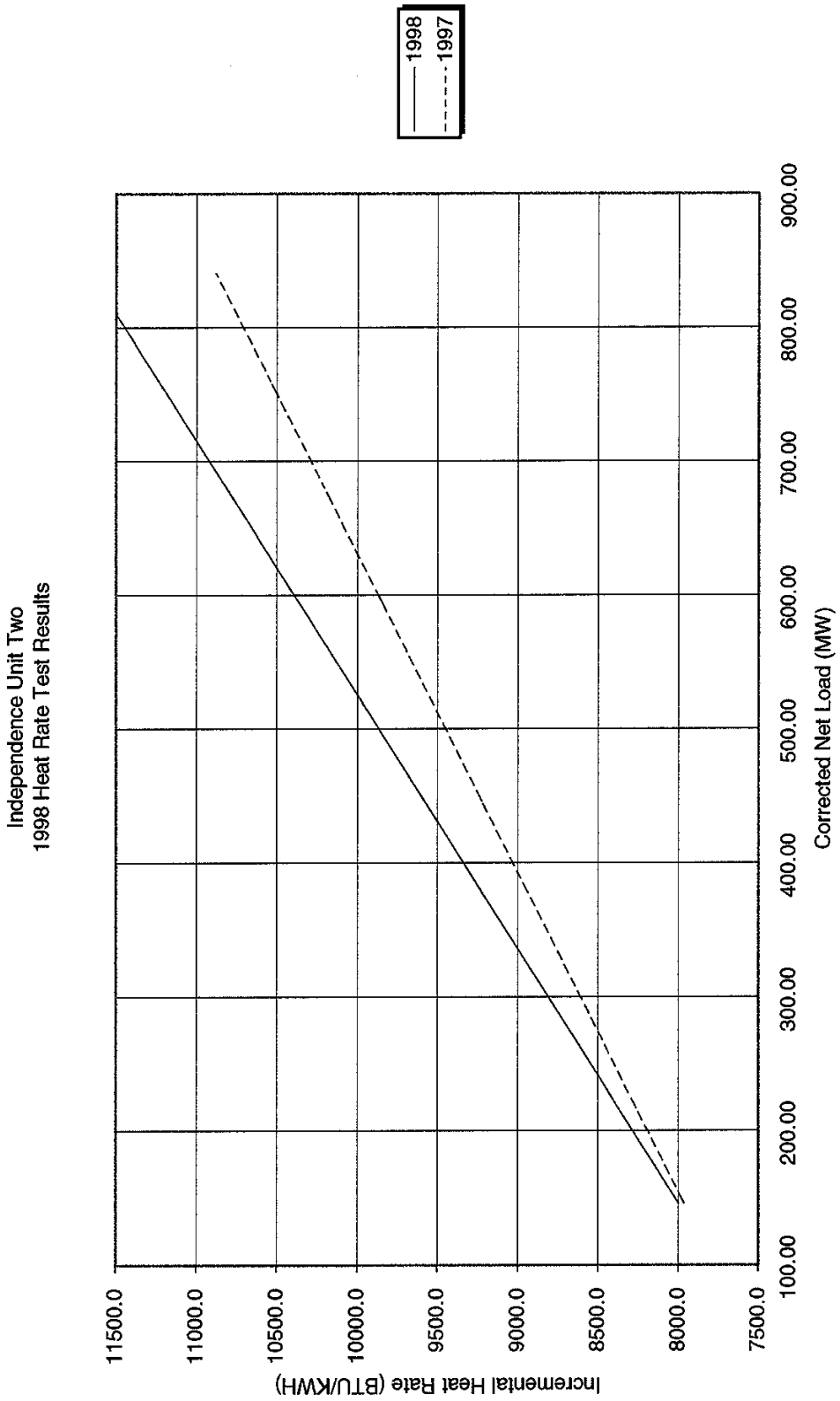

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

ISES_00005732

10-05-1998 11:25:18

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2160a

THE AVERAGE GROSS GENERATION IS..... 175.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.13 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 98.25 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.62 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.53 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.68 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.73 PCT
THE AVERAGE COAL FLOW IS..... 239700.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8909.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.63 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.76 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.39 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.30 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1174722.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -13.23 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -11.95 %
BPCHG = 1.46
KWCHG = -1.44
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.014438 %

THE CORRECTED GROSS GENERATION IS..... 172.51 MWe

THE CORRECTED NET GENERATION IS..... 147.51 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14236.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14477.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2135.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:26:10

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2160b.cor

THE AVERAGE GROSS GENERATION IS..... 174.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.08 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 97.21 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.02 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.45 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.79 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.04 PCT
THE AVERAGE COAL FLOW IS..... 239800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8903.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 7.19 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.12 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.53 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 93.43 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.29 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1162089.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -13.64 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -12.06 %
BPCHG = 1.83
KWCHG = -1.80
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.017968 %

THE CORRECTED GROSS GENERATION IS..... 170.93 MWe

THE CORRECTED NET GENERATION IS..... 145.93 MWe

THE UNCORRECTED NET HEAT RATE IS..... 14328.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 14630.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2134.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:26:45

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2225a.cor

THE AVERAGE GROSS GENERATION IS..... 249.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.35 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 101.64 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.11 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.26 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 81.50 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 71.86 PCT
THE AVERAGE COAL FLOW IS..... 308500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8895.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.53 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.32 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.02 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.82 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.54 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1670416.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.26 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.21 %
BPCHG = 1.17
KWCHG = -1.16
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011610 %

THE CORRECTED GROSS GENERATION IS..... 246.14 MWe

THE CORRECTED NET GENERATION IS..... 220.14 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12305.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12465.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2744.1 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:27:16

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2225b.cor

THE AVERAGE GROSS GENERATION IS..... 245.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.31 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 101.01 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.49 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.52 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 79.25 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 76.70 PCT
THE AVERAGE COAL FLOW IS..... 308400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8881.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 9.52 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.02 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.73 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.21 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.50 IN-HG
THE TURBINE THROTTLE FLOW IS..... 1642002.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -10.57 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -9.49 %
BPCHG = 1.21
KWCHG = -1.19
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011911 %

THE CORRECTED GROSS GENERATION IS..... 242.12 MWe

THE CORRECTED NET GENERATION IS..... 217.12 MWe

THE UNCORRECTED NET HEAT RATE IS..... 12449.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 12614.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 2738.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:27:52

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2300a.cor

THE AVERAGE GROSS GENERATION IS..... 331.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 27.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.45 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 102.21 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.75 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.93 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.91 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.31 PCT
THE AVERAGE COAL FLOW IS..... 393600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8919.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.46 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.04 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.91 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.62 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.73 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2182203.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.50 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.26 %
BPCHG = 1.35
KWCHG = -1.33
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013345 %

THE CORRECTED GROSS GENERATION IS..... 326.64 MWe

THE CORRECTED NET GENERATION IS..... 299.64 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11547.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11715.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3510.5 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:28:28

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2300b.cor

THE AVERAGE GROSS GENERATION IS..... 328.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 25.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.41 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 101.62 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 90.21 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.20 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.54 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 77.33 PCT
THE AVERAGE COAL FLOW IS..... 384400.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8900.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 11.41 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.37 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 93.83 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 94.67 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.73 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2159569.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -8.75 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -7.33 %
BPCHG = 1.56
KWCHG = -1.54
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.015356 %

THE CORRECTED GROSS GENERATION IS..... 323.04 MWe

THE CORRECTED NET GENERATION IS..... 298.04 MWe

THE UNCORRECTED NET HEAT RATE IS..... 11291.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11478.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 3421.2 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:29:10

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2375a.cor

THE AVERAGE GROSS GENERATION IS..... 411.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.68 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 106.25 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.67 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.83 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.81 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 71.85 PCT
THE AVERAGE COAL FLOW IS..... 474200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8882.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.58 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.43 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.28 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.52 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.98 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2686392.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.51 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.41 %
BPCHG = 1.17
KWCHG = -1.16
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.011587 %

THE CORRECTED GROSS GENERATION IS..... 406.29 MWe

THE CORRECTED NET GENERATION IS..... 378.29 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10997.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11133.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4211.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:31:27

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2375b.cor

THE AVERAGE GROSS GENERATION IS..... 412.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 26.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.64 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 105.29 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.92 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.99 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.24 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 74.05 PCT
THE AVERAGE COAL FLOW IS..... 475800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8832.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 13.37 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.72 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.11 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.31 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 2.98 IN-HG
THE TURBINE THROTTLE FLOW IS..... 2688561.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -6.64 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -5.41 %
BPCHG = 1.32
KWCHG = -1.31
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.013064 %

THE CORRECTED GROSS GENERATION IS..... 406.69 MWe

THE CORRECTED NET GENERATION IS..... 380.69 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10886.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 11038.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4202.3 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:32:12

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2450a.cor

THE AVERAGE GROSS GENERATION IS..... 479.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.88 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 108.42 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.55 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.95 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 78.80 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 76.10 PCT
THE AVERAGE COAL FLOW IS..... 533900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8860.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.87 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.96 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.17 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.76 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.15 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3110695.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.16 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.34 %
BPCHG = 0.86
KWCHG = -0.86
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008553 %

THE CORRECTED GROSS GENERATION IS..... 474.94 MWe

THE CORRECTED NET GENERATION IS..... 446.94 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10488.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10583.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4730.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:32:42

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2450b.cor

THE AVERAGE GROSS GENERATION IS..... 478.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 28.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 2.92 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 108.36 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.65 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 72.72 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 77.81 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.70 PCT
THE AVERAGE COAL FLOW IS..... 533100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8906.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 15.71 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.81 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.05 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 95.89 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.19 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3108552.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -5.04 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -4.21 %
BPCHG = 0.88
KWCHG = -0.87
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.008723 %

THE CORRECTED GROSS GENERATION IS..... 473.87 MWe

THE CORRECTED NET GENERATION IS..... 445.87 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10550.6 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10648.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 4747.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 13:03:59

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2525a.cor

THE AVERAGE GROSS GENERATION IS..... 555.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 29.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.04 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 109.92 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.16 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.43 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.21 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.50 PCT
THE AVERAGE COAL FLOW IS..... 618100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8825.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 17.76 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.23 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.31 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.25 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.49 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3602515.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -4.05 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.84 %
BPCHG = 1.26
KWCHG = -1.25
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012481 %

THE CORRECTED GROSS GENERATION IS..... 548.16 MWe

THE CORRECTED NET GENERATION IS..... 519.16 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10370.2 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10506.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5454.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 13:04:17

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2525b.cor

THE AVERAGE GROSS GENERATION IS..... 556.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 30.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.08 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 110.04 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 91.98 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.19 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.07 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.06 PCT
THE AVERAGE COAL FLOW IS..... 617100.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8833.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 18.06 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.28 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.35 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.05 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.54 IN-HG
THE TURBINE THROTTLE FLOW IS..... 3613031.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -3.94 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -2.71 %
BPCHG = 1.28
KWCHG = -1.27
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012664 %

THE CORRECTED GROSS GENERATION IS..... 549.05 MWe

THE CORRECTED NET GENERATION IS..... 519.05 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10362.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10501.6 BTU/NKW

THE TOTAL HEAT INPUT IS..... 5450.8 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:35:01

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2600a.cor

THE AVERAGE GROSS GENERATION IS..... 633.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 33.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.42 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.99 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.03 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 71.01 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.13 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 81.76 PCT
THE AVERAGE COAL FLOW IS..... 711800.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8902.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 19.96 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.89 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.20 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.34 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.85 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4139956.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.63 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.62 %
BPCHG = 1.04
KWCHG = -1.03
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010322 %

THE CORRECTED GROSS GENERATION IS..... 626.53 MWe

THE CORRECTED NET GENERATION IS..... 593.53 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10560.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10675.8 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6336.4 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:35:48

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2600b.cor

THE AVERAGE GROSS GENERATION IS..... 633.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 31.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.33 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 112.81 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.62 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 70.76 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.70 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 82.37 PCT
THE AVERAGE COAL FLOW IS..... 709600.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8820.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 20.19 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.89 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.19 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 96.93 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 3.74 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4131138.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -2.85 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -1.87 %
BPCHG = 1.02
KWCHG = -1.01
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.010063 %

THE CORRECTED GROSS GENERATION IS..... 626.69 MWe

THE CORRECTED NET GENERATION IS..... 595.69 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10396.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10506.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 6258.7 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:36:40

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2680a.cor

THE AVERAGE GROSS GENERATION IS..... 713.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 35.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.91 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 118.54 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.66 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 73.32 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 75.52 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 89.70 PCT
THE AVERAGE COAL FLOW IS..... 793500.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8956.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 22.88 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 90.95 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.08 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.78 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.25 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4724497.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.24 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.52 %
BPCHG = 0.73
KWCHG = -0.73
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.007287 %

THE CORRECTED GROSS GENERATION IS..... 707.84 MWe

THE CORRECTED NET GENERATION IS..... 672.84 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10481.7 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10562.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7106.6 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:37:13

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2680b.cor

THE AVERAGE GROSS GENERATION IS..... 710.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 34.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 3.96 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 118.69 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 95.61 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 74.07 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 76.71 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 88.14 PCT
THE AVERAGE COAL FLOW IS..... 793300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8907.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 23.08 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 91.65 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.15 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.11 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.23 IN-HG
THE TURBINE THROTTLE FLOW IS..... 4709319.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -1.14 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... -0.55 %
BPCHG = 0.60
KWCHG = -0.60
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.005975 %

THE CORRECTED GROSS GENERATION IS..... 705.78 MWe

THE CORRECTED NET GENERATION IS..... 671.78 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10452.5 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10518.2 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7065.9 MMBTU

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

Confidential Business Information

10-05-1998 11:37:43

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2760a.cor

THE AVERAGE GROSS GENERATION IS..... 800.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.05 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.58 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.78 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.76 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.42 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 79.37 PCT
THE AVERAGE COAL FLOW IS..... 900000.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8837.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.80 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.87 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.68 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.59 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.59 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5396092.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.79 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.17 %
BPCHG = 0.96
KWCHG = -0.95
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009536 %

THE CORRECTED GROSS GENERATION IS..... 792.44 MWe

THE CORRECTED NET GENERATION IS..... 753.44 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10451.1 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10555.9 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7953.3 MMBTU

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10-05-1998 11:41:18

HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2760b.cor

THE AVERAGE GROSS GENERATION IS..... 800.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 39.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.07 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.13 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 93.79 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 69.53 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.34 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.74 PCT
THE AVERAGE COAL FLOW IS..... 899300.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8870.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 25.34 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.84 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.67 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 98.62 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.62 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5398903.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.74 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.23 %
BPCHG = 0.98
KWCHG = -0.97
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009656 %

THE CORRECTED GROSS GENERATION IS..... 792.35 MWe

THE CORRECTED NET GENERATION IS..... 753.35 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10482.0 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10588.4 BTU/NKW

THE TOTAL HEAT INPUT IS..... 7976.8 MMBTU

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HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2842a.cor

THE AVERAGE GROSS GENERATION IS..... 859.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 41.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.17 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.68 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.75 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 67.16 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 71.88 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 78.34 PCT
THE AVERAGE COAL FLOW IS..... 966900.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8827.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 26.93 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 88.32 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.79 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 99.22 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.93 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5851326.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.50 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.71 %
BPCHG = 1.22
KWCHG = -1.20
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.012018 %

THE CORRECTED GROSS GENERATION IS..... 848.80 MWe

THE CORRECTED NET GENERATION IS..... 807.80 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10433.8 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10565.5 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8534.8 MMBTU

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HEAT RATE CORRECTIONS FOR INDEPENDENCE TWO

MEASURED TEST INPUTS FROM FILE 2842b.cor

THE AVERAGE GROSS GENERATION IS..... 858.00 MWe
THE AVERAGE AUXILIARY USAGE IS..... 41.00 MWe
THE AVERAGE CONDENSER BACKPRESSURE IS..... 4.21 IN-HG
THE AVERAGE CIRCULATING WATER TEMPERATURE FROM THE
CONDENSER IS..... 119.65 DEG F
THE AVERAGE CIRCULATING WATER TEMPERATURE TO THE
CONDENSER IS..... 92.61 DEG F
THE AVERAGE AMBIENT WET BULB TEMPERATURE IS..... 68.71 DEG F
THE AVERAGE AMBIENT DRY BULB TEMPERATURE IS..... 74.37 DEG F
THE COMPUTED RELATIVE HUMIDITY IS..... 75.34 PCT
THE AVERAGE COAL FLOW IS..... 970200.00 LB/HR
THE AVERAGE COAL HIGH HEATING VALUE IS..... 8903.00 BTU/LB
THE AVERAGE OIL FLOW IS..... 0.00 BBL/HR
THE AVERAGE OIL HIGH HEATING VALUE IS..... 0.00 BTU/BBL

CALCULATED RESULTS

THE COOLING TOWER CIRCULATING WATER FLOW IS..... 341000 GPM
THE COOLING TOWER RANGE IS..... 27.04 DEG F
THE DESIGN COLD WATER TEMPERATURE IS..... 89.59 DEG F
THE DESIGN MAXIMUM COLD WATER TEMPERATURE IS..... 94.92 DEG F
THE AVERAGE MAXIMUM CONDENSER COOLING WATER
TEMPERATURE IS..... 97.94 DEG F
THE SATURATION PRESSURE FOR THE AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE IS..... 4.83 IN-HG
THE TURBINE THROTTLE FLOW IS..... 5847431.00 LB/HR
THE HEAT RATE CORRECTION FACTOR FOR CONDENSER
BACKPRESSURE IS..... -0.44 %
THE HEAT RATE CORRECTION FACTOR FOR AVERAGE MAXIMUM
CONDENSER COOLING WATER TEMPERATURE SATURATION
PRESSURE IS..... 0.55 %
BPCHG = 1.00
KWCHG = -0.99
THE BACKPRESSURE CORRECTION FACTOR IS..... 1.009861 %

THE CORRECTED GROSS GENERATION IS..... 849.62 MWe

THE CORRECTED NET GENERATION IS..... 808.62 MWe

THE UNCORRECTED NET HEAT RATE IS..... 10572.4 BTU/NKW

THE CORRECTED NET HEAT RATE IS..... 10682.0 BTU/NKW

THE TOTAL HEAT INPUT IS..... 8637.7 MMBTU

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this operating procedure is to provide you with an overview of the Coal Board and explain its startup, normal operation, and shutdown. The procedure also summarizes the operators' responses to system alarms and provides checklists for the motor circuit breakers, and system instrumentation. The procedure will cover the following components:

- Coal Conveyors
- Surge Bins
- Magnetic Separators
- Vibrating Feeders
- Telescopic Chute

1.2 Operational Outline

The coal board is used to operate the coal handling equipment is five different operating modes. The modes are selected from the pistol grip handle in the middle of the control board. A brief overview of each operating mode is described below.

Note: The OPERATING MODE selector is not currently utilized to automatically transfer coal. The information listing how the MODE selections operate is for informational purposes only.

Mode 1 — Coal is reclaimed from the live storage pile at the rate set by the operator. This coal is sent to the boiler surge bin at a rate equal to the plant burn rate. All excess coal is sent to the dead storage pile.

Mode 2 — Coal is reclaimed from the live storage pile at a rate set by the operator. This coal is sent to the boiler surge bin at a rate equal to the plant burn rate. All excess coal placed in ready storage by the stacker reclaimer.

Mode 3 — Coal is reclaimed from the live storage pile at a rate equal to the plant burn rate. All of the coal is supplied to the boiler surge bin.

Mode 4 — Coal is reclaimed from the ready storage piles by the stacker reclaimer operating in reclaim mode. All of the reclaimed coal is sent to the boiler surge bin at a rate equal to the plant burn rate.

Mode 5 — Coal is reclaimed from the dead storage pile at a rate equal to the plant burn rate. All coal is supplied to the boiler surge bin.

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2.0 SYSTEM STARTUP INSTRUCTIONS

2.1 Initial Conditions

- All electrical and mechanical hold cards are released.
- Power available for alarms and trips.
- Instrument air available for instrumentation and control.
- All rotating equipment guards and safety devices are installed.
- Check regularly for oil leaks. Oil leaks pose a serious personnel safety hazard, as well as a fire hazard.
- Always be aware of the hazards of slipping and falling. Accumulations of coal dust and coal can be slippery.
- Watch for falling objects especially while working under and around operating belts and equipment.
- Familiarize yourself with the numerous startup bells, horns and buzzers which signify that equipment is being started.
- DO NOT shovel or clear chutes/pans while equipment is operating.
- DO NOT attempt to clear a clogged belt or belt chute until is stopped and isolated.

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2.2 Limits and Setpoints

2.2.1 Capacities

Component	Speed	Capacity
Conveyor 1A	565	3600 tph
Conveyor 2A	615 fpm	2600 tph
Conveyor 3A	615 fpm	1600 tph
Conveyor 4A	615 fpm	1600 tph
Conveyor 5A	407	1600 tph
Conveyor 6A (Reclaim)	450	1600 tph
Conveyor 6A (Stackout)	450	2100 tph
Conveyor 9A	465 fpm	1600 tph
Conveyor 10A	465 fpm	1600 tph
Conveyor 11A	430 fpm	500 tph
Conveyor 12A	425	500 tph
Conveyor 13A	100	500 tph
Conveyor 14A	430 fpm	500 tph
Conveyor 15A	425	500 tph
Conveyor 16A	100	500 tph
Conveyor 17A	430 fpm	500 tph
Conveyor 18A	425	500 tph
Conveyor 19A	100	500 tph
Conveyor 20A	430 fpm	500 tph
Conveyor 21A	425	500 tph
Conveyor 22A	100	500 tph
Conveyor 23A	450	1600 tph
Crusher Surge Bin Capacity	N/A	300 tons
Transfer Surge Bin Capacity	N/A	350 tons
Boiler Surge Bin Capacity	N/A	300 tons
Stacker Reclaimer Hopper Capacity	N/A	30 tons
Series 2 Feeder Capacities	N/A	Min: 150 tons Max: 800 tons
Series 3 Feeder Capacities	N/A	Min: 300 tons Max: 1600 tons
4A and 4B Feeder Capacities	N/A	Min: 300 tons Max: 1600 tons
5A Feeder Capacities	N/A	Min: 525 tons Max: 2100 tons
6A Feeder Capacities	N/A	Min: 150 tons Max: 1600 tons

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Component	Speed	Capacity
Series 8 Feeder Capacities	N/A	Min: 300 tons Max: 1600 tons
9A Feeder Capacities	9.78 RPM	Min: 60 tons Max: 560 tons
10B Feeder Capacities	9.78 RPM	Min: 60 tons Max: 560 tons
11C Feeder Capacities	N/A	Min: 80 tons Max: 500 tons
12D Feeder Capacities	N/A	Min: 80 tons Max: 500 tons
Feeder AF4A Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF4B Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF5A Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF8D Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF8E Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF8F Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF9A Belt Speeds	N/A	N/A
Feeder AF10B Belt Speeds	N/A	N/A
Feeder AF11C Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF12D Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A

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2.3 Place a Coal Conveyor in Service

	ACTION	LOC	VERIFICATION
NOTE:	**The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.**		
1.	VERIFY the coal conveyor is being started in the proper sequence.	C	All downstream conveyors are in service.
2.	VERIFY there is no coal on the conveyor.	L	Conveyor is clear of coal.
3.	DEPRESS the conveyor RESET pushbutton.	C	Ready light illuminates.
4.	VERIFY the conveyor READY light illuminates.	C	Ready light illuminates on coal board.
5.	If the conveyor is to be operated in MANUAL, TURN the conveyor selector switch to MANUAL position.	C	Conveyor starts in MANUAL.
6.	If the conveyor is to be operated in AUTO, TURN the conveyor selector switch to the AUTO position.	C	Conveyor starts in AUTO.
7.	VERIFY the conveyor is operating properly.	C/L	Conveyor motor amps are normal for an empty belt.
8.	If necessary, PLACE additional conveyors in service by repeating step 1 through 7 above.	C/L	Additional conveyors are started as required.

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2.4 Place a Magnetic Separator in Service

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. CHECK the magnetic separator belt for indications of wear.	L	Magnetic separator belt not damaged.
2. PLACE the magnetic separator BYPASS-ON selector switch in the ON position.	C	Magnetic separator running light illuminates.
3. VERIFY the magnetic separator is running properly.	L	a. No unusual noises or vibrations. b. Belt is properly aligned on head and tail pulleys.

2.5 Place a Vibrating Feeder in Service

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY sufficient coal supply for vibrating feeder.	L/C	Coal supply is available to feeder.
2. VERIFY the coal conveyors are ready to receive coal.	C	All coal conveyors from source to destination are in service and operating properly.
3. PLACE the vibrating feeder ON-OFF selector switch in the ON position.	C	Vibrating feeder starts.
4. VERIFY the vibrating feeder is operating properly.	C	a. No unusual noises. b. Manual feed rate is properly set.

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2.6 Automatic Operation in Mode 1

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 1 position.	C	MODE 1 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 2A b. Conveyor 3A or 4A c. Conveyor 5A d. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. DEPRESS the RESET pushbutton for the following feeders: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A and 4B	C	Reset light goes out for each feeder.
4. START magnetic separator 2A.	C	Magnetic separator 2A is running.
5. START magnetic separators 9A or 10A.	C	Magnetic separators 9A and 10A in service.
6. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	Conveyor 9A (or 10A) starts.
7. LOWER telescopic chute into position.	C	Telescopic chute 5A is in position over the dead storage pile.
8. START conveyor 5A by placing its selector switch in the AUTO position.	C	a. Conveyor 5A starts. b. Motor run light illuminate.
9. START conveyor 3A (or 4A) by placing its selector switch in the AUTO position.	C	a. Conveyor 3A (or 4A) starts. b. Motor run light illuminate.
10. START conveyor 2A by placing its selector switch in the AUTO position.	C	a. Conveyor 2A starts. b. Motor run light illuminate.

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ACTION	LOC	VERIFICATION
11. VERIFY the proper surge bin level is selected at the boiler surge bin level controller.	C	Boiler surge bin set at proper level.
12. PLACE each of the following feeders in AUTO: d. Feeders 2A, 2B, 2C, and 2D e. Feeders 3A or 3B f. Feeders 4A or 4B	C	a. Feeders start. b. Feeders 3A or 3B return to manual when feeder 4B is placed in AUTO. c. Motor run light illuminate.
13. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Boiler surge bin level maintained at proper setpoint.
14. VERIFY excess coal is being supplied to the dead storage pile.	C	Excess coal is discharged off of conveyor 5A to the dead storage pile.

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2.7 Automatic Operation in Mode 2

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 2 position.	C	MODE 2 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 2A b. Conveyor 3A or 4A c. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. DEPRESS the RESET pushbutton for the following feeders: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	Reset light goes out for each feeder.
4. START magnetic separator 2A.	C	Magnetic separator 2A is running.
5. START magnetic separators 9A or 10A.	C	Magnetic separators 9A and 10A in service.
6. VERIFY the stacker reclaimer is operating in STACKOUT MODE as per the stacker reclaimer operating procedure.	C	a. Stacker reclaimer operating in stackout mode. b. Conveyor 6A operating in stackout direction.
7. DEPRESS feeder AF5A RESET pushbutton.	C	Reset light goes out for feeder 5A.
8. PLACE feeder AF5A selector switch in the AUTO position.	C	a. Feeder 5A starts. b. Motor run light illuminate.
9. START conveyor 9A 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
10. START conveyor 4A or 3A by placing its selector switch in the AUTO position.	C	a. Conveyor 4A or 3A starts. b. Motor run light illuminate.

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ACTION	LOC	VERIFICATION
11. START conveyor 2A by placing its selector switch in the AUTO position.	C	a. Conveyor 2A starts. b. Motor run light illuminate.
12. VERIFY the proper surge bin level is selected at the boiler surge bin level controller.	C	Boiler surge bin set at proper level.
13. PLACE each of the following feeders in AUTO: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	a. Feeders start. b. Feeders 3A or 3B return to manual when feeder 4B is placed in AUTO. c. Motor run light illuminate.
14. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Boiler surge bin level maintained at proper setpoint.
15. VERIFY excess coal is being supplied to the stacker reclaimer (stackout mode).	C	Excess coal is discharged off of conveyor 6A to the stackout pile.

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2.8 Automatic Operation in Mode 3

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 3 position.	C	MODE 3 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 2A b. Conveyor 3A or 4A c. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. DEPRESS the RESET pushbutton for the following feeders: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	Reset light goes out for each feeder.
4. START magnetic separator 2A.	C	Magnetic separator 2A is running.
5. START magnetic separators 9A or 10A.	C	Magnetic separators 9A and 10A in service.
6. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
7. START conveyor 4A or 3A by placing its selector switch in the AUTO position.	C	a. Conveyor 4A starts. b. Motor run light illuminate.
8. START conveyor 2A by placing its selector switch in the AUTO position.	C	a. Conveyor 2A starts. b. Motor run light illuminate.
9. VERIFY the proper surge bin level is selected at the transfer surge bin level controller.	C	Transfer surge bin set at proper level.
10. PLACE each of the following feeders in AUTO: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	a. Feeders start. b. Motor run light illuminate.
11. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Transfer surge bin level maintained at proper setpoint by feeders 3A or 3B.

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2.9 Automatic Operation in Mode 4

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 4 position.	C	MODE 4 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 6A (Reclaim) b. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. VERIFY all dust collection equipment is ready for service for conveyors 6A, 9A, and 10A.	C/L	Dust collection equipment ready for service.
4. START magnetic separators 9A or 10A.	C	Magnetic separator 9A or 10A in service.
5. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
6. POSITION flowgate 7A to direct coal to conveyor 9A (or 10A).	C	Coal directed off of conveyor 6A will be transferred on to conveyor 9A (or 10A).
7. START conveyor 6A in the reclaim direction by placing its selector switches in the RECLAIM and AUTO positions.	C	Conveyor 6A starts in reclaim direction.
8. VERIFY the stacker reclaimer is operating in reclaim mode as per the Stacker Reclaimer operating procedure.	C	Stacker reclaimer operating in reclaim mode.
9. PLACE feeder 6A selector switch in AUTO.	C	Feeder starts.
10. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Coal feed rate equals plant burn rate.

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2.10 Automatic Operation in Mode 5

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 5 position.	C	MODE 5 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 9A or 10A b. Conveyor 23A	C	Reset light goes out for each conveyor.
3. START magnetic separators 9A or 10A.	C	Magnetic separator 9A or 10A in service.
4. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
5. POSITION flowgate 8C to direct coal to conveyor 9A (or 10A).	C	Coal directed off of conveyor 23A will be transferred on to conveyor 9A (or 10A).
6. START conveyor 23A by placing its selector switch in the AUTO position.	C	a. Conveyor 23A starts. b. Motor run light illuminate.
7. DEPRESS the RESET pushbutton for the following feeders: a. Feeder 8D or 8E or 8F	C	Reset light goes out for each feeder.
8. PLACE feeder 8D (or 8E or 8F) selector switch in AUTO.	C	a. Feeder starts. b. Motor run light illuminate.
9. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Boiler surge bin level is maintained at setpoint.

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2.11 Filling the Unit 1 South Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the south silos require filling.	C	South silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 11A b. Conveyor 12A c. Conveyor 13A	C	Reset light goes out for each conveyor.
3. PLACE the south silo control gates in OPEN.	C	Silos D, C, and B gates are in OPEN.
4. VERIFY south silo gate A is open.	L	Silo gate A is open.
5. Start conveyors 13A, 12A and 11A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (A-D) that is in service.	C	Determine end mill / feeder (A-D) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 9A RESET pushbutton.	C	Ready light illuminates for feeder 9A.
9. START feeder 9A by placing its selector switch in the AUTO position.	C	a. Feeder 9A starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to D silo.	C	Silo D level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 9A.

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2.12 Filling the Unit 1 North Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the north silos require filling.	C	North silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 14A b. Conveyor 15A c. Conveyor 16A	C	Reset light goes out for each conveyor.
3. PLACE the north silo control gates in OPEN.	C	Silos H, G, and F gates are in OPEN.
4. VERIFY north silo gate E is open.	L	Silo gate E is open.
5. Start conveyors 16A, 15A and 14A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (E-H) that is in service.	C	Determine end mill / feeder (E-H) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 10B RESET pushbutton.	C	Ready light illuminates for feeder 10B.
9. START feeder 10B by placing its selector switch in the AUTO position.	C	a. Feeder 10B starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to H silo.	C	Silo H level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 10B.

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2.13 Filling the Unit 2 South Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the south silos require filling.	C	South silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 17A b. Conveyor 18A c. Conveyor 19A	C	Ready light illuminates for each conveyor.
3. PLACE the south silo control gates in AUTO.	C	Silos 2D, 2C, and 2B gates are in AUTO.
4. VERIFY south silo gate A is open.	L	Silo gate 2A is open.
5. Start conveyors 19A, 18A and 17A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (A-D) that is in service.	C	Determine end mill / feeder (A-D) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 12D RESET pushbutton.	C	Ready light illuminates for feeder 12D.
9. START feeder 12D by placing its selector switch in the AUTO position.	C	a. Feeder 12D starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to D silo.	C	Silo D level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 12D.

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2.14 Filling the Unit 2 North Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the north silos require filling.	C	North silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 20A b. Conveyor 21A c. Conveyor 22A	C	Reset light goes out for each conveyor.
3. PLACE the north silo control gates in AUTO.	C	Silos 2H, 2G, and 2F gates are in AUTO.
4. VERIFY north silo gate 2E is open.	L	Silo gate 2E is open.
5. Start conveyor 22A, 21A and 20A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (E-H) that is in service.	C	Determine end mill / feeder (E-H) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 11C RESET pushbutton.	C	Ready light illuminates for feeder 11C.
9. START feeder 11C by placing its selector switch in the AUTO position.	C	a. Feeder 11C starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to H silo.	C	Silo H level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 11C.

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3.0 SYSTEM NORMAL OPERATION

3.1 Coal Conveying System Routine Checks

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. CHECK all indicators on the coal board.	C	All indicators within normal operating parameters.
2. INSPECT the magnetic separators and belt for proper operation.	L	Magnetic separator belt discarding tramp iron and other ferrous materials.
3. Monitor the conveyor drive assemblies.	L	Conveyor drive motors, speed reducers and couplings operating properly.
4. INSPECT belt scrapers to ensure coal is being cleaned from the conveyors.	L	Coal conveyor scrapers operating properly.
5. MONITOR all conveyor motors for proper operation.	L/C	a. No unusual noises or vibrations. b. Motor amps normal. c. Motor temperature normal. d. Dual drive conveyor motors operating at same current.
6. VERIFY the coal conveyor scales are operating properly.	L/C	Coal scales recording coal weight.
7. VERIFY the surge bins are being maintained at the proper level.	C	Surge bin levels normal.

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4.0 SYSTEM SHUTDOWN INSTRUCTIONS

4.1 Shutdown a Coal Conveyor and Magnetic Separator

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY that coal transferring operation are completed.	C/L	Coal conveyor is no longer needed for service.
2. VERIFY that all operating coal conveyors are empty of coal.	L	No coal is on conveyor.
3. Starting with the last conveyor in the coal flow path, DEPRESS the stop pushbutton.	C	a. Conveyor stops. b. Reset light illuminate.
4. Stop magnetic separator by placing selector switch in bypass.	C	Magnetic separator is shutdown.

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5.0 SYSTEM ALARM RESPONSES

5.1 Summary of Alarms

None

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Table 1 - Prestart Power Lineup Checklist

Location	Description	Voltage	Position
12B3	Conveyor 1A Drive Motor	4160	On
12B3	Conveyor 2A Drive Motor	4160	On
12B3	Conveyor 3A Drive Motor	4160	On
12B4	Conveyor 4A Drive Motor	4160	On
12B4	Conveyor 5A Drive Motor	4160	On
12B3	Conveyor 6A Drive Motor	4160	On
12B1	Conveyor 9A Drive Motor 1	4160	On
12B1	Conveyor 9A Drive Motor 2	4160	On
12B2	Conveyor 10A Drive Motor 1	4160	On
12B2	Conveyor 10A Drive Motor 2	4160	On
1C26	Conveyor 11A Drive Motor	480	On
1C26	Conveyor 12A Drive Motor	480	On
1C1	Conveyor 13A Drive Motor	480	On
1C26	Conveyor 14A Drive Motor	480	On
1C26	Conveyor 15A Drive Motor	480	On
1C2	Conveyor 16A Drive Motor	480	On
2C26	Conveyor 17A Drive Motor	480	On
2C26	Conveyor 18A Drive Motor	480	On
2C1	Conveyor 19A Drive Motor	480	On
2C26	Conveyor 20A Drive Motor	480	On
2C26	Conveyor 21A Drive Motor	480	On
2C2	Conveyor 22A Drive Motor	480	On
12B4	Conveyor 23A Drive Motor	4160	On
1C15	Feeder 1A Drive Motor	480	On
1C25	Feeder 1B Drive Motor	480	On
1C15	Feeder 1C Drive Motor	480	On
1C25	Feeder 1D Drive Motor	480	On
12C41	Feeder 2A Drive Motor	480	On
12C31	Feeder 2B Drive Motor	480	On
12C41	Feeder 2C Drive Motor	480	On
12C31	Feeder 2D Drive Motor	480	On
12C31	Feeder 3A Drive Motor	480	On
12C41	Feeder 3B Drive Motor	480	On
12C31	Feeder 4A Drive Motor	480	On
12C31	Feeder 4B Drive Motor	480	On
12C31	Feeder 5A Drive Motor	480	On
12C42	Feeder 8D Drive Motor	480	On
12C43	Feeder 8E Drive Motor	480	On
12C43	Feeder 8F Drive Motor	480	On
1C26	Feeder 9A Drive Motor	480	On

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Location	Description	Voltage	Position
1C26	Feeder 10B Drive Motor	480	On
2C26	Feeder 11C Drive Motor	480	On
2C26	Feeder 12D Drive Motor	480	On
12C31	Magnetic Separator 2A	480	On
1C26	Magnetic Separator 9A	480	On
2C26	Magnetic Separator 10A	480	On
12C42	Telescopic Chute 5A	480	On
12C33	Telescopic Chute 1A	480	On
12B3	Crusher 1A	4160	Off
12B4	Crusher 2A	4160	Off

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6.0 SIGN OFF AND RECORD OF REVISIONS

Craig Brown _____ 9/11/02
REVIEWED BY: OPERATOR DATE

John G. Tinin _____ 9/11/02
APPROVED BY: OPERATIONS SUPERVISOR DATE

RECORD OF REVISIONS

Revision	Explanation	Date
Rev. 0	Initial Issue	08/02/95
Rev. 2	Completed revision. On a high level removed all reference to dust collectors in both SD & OP. Removed OP 5.0 System Abnormal Conditions. Changed OP 2.11-2.14Changed title form Coal Yard to Fuel Handling	09/11/02

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this operating procedure is to provide you with an overview of the Coal Board and explain its startup, normal operation, and shutdown. The procedure also summarizes the operators' responses to system alarms and provides checklists for the motor circuit breakers, and system instrumentation. The procedure will cover the following components:

- Coal Conveyors
- Surge Bins
- Magnetic Separators
- Vibrating Feeders
- Telescopic Chute

1.2 Operational Outline

The coal board is used to operate the coal handling equipment is five different operating modes. The modes are selected from the pistol grip handle in the middle of the control board. A brief overview of each operating mode is described below.

Note: The OPERATING MODE selector is not currently utilized to automatically transfer coal. The information listing how the MODE selections operate is for informational purposes only.

Mode 1 — Coal is reclaimed from the live storage pile at the rate set by the operator. This coal is sent to the boiler surge bin at a rate equal to the plant burn rate. All excess coal is sent to the dead storage pile.

Mode 2 — Coal is reclaimed from the live storage pile at a rate set by the operator. This coal is sent to the boiler surge bin at a rate equal to the plant burn rate. All excess coal placed in ready storage by the stacker reclaimer.

Mode 3 — Coal is reclaimed from the live storage pile at a rate equal to the plant burn rate. All of the coal is supplied to the boiler surge bin.

Mode 4 — Coal is reclaimed from the ready storage piles by the stacker reclaimer operating in reclaim mode. All of the reclaimed coal is sent to the boiler surge bin at a rate equal to the plant burn rate.

Mode 5 — Coal is reclaimed from the dead storage pile at a rate equal to the plant burn rate. All coal is supplied to the boiler surge bin.

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2.0 SYSTEM STARTUP INSTRUCTIONS

2.1 Initial Conditions

- All electrical and mechanical hold cards are released.
- Power available for alarms and trips.
- Instrument air available for instrumentation and control.
- All rotating equipment guards and safety devices are installed.
- Check regularly for oil leaks. Oil leaks pose a serious personnel safety hazard, as well as a fire hazard.
- Always be aware of the hazards of slipping and falling. Accumulations of coal dust and coal can be slippery.
- Watch for falling objects especially while working under and around operating belts and equipment.
- Familiarize yourself with the numerous startup bells, horns and buzzers which signify that equipment is being started.
- DO NOT shovel or clear chutes/pans while equipment is operating.
- DO NOT attempt to clear a clogged belt or belt chute until is stopped and isolated.

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2.2 Limits and Setpoints

2.2.1 Capacities

Component	Speed	Capacity
Conveyor 1A	565	3600 tph
Conveyor 2A	615 fpm	2600 tph
Conveyor 3A	615 fpm	1600 tph
Conveyor 4A	615 fpm	1600 tph
Conveyor 5A	407	1600 tph
Conveyor 6A (Reclaim)	450	1600 tph
Conveyor 6A (Stackout)	450	2100 tph
Conveyor 9A	465 fpm	1600 tph
Conveyor 10A	465 fpm	1600 tph
Conveyor 11A	430 fpm	500 tph
Conveyor 12A	425	500 tph
Conveyor 13A	100	500 tph
Conveyor 14A	430 fpm	500 tph
Conveyor 15A	425	500 tph
Conveyor 16A	100	500 tph
Conveyor 17A	430 fpm	500 tph
Conveyor 18A	425	500 tph
Conveyor 19A	100	500 tph
Conveyor 20A	430 fpm	500 tph
Conveyor 21A	425	500 tph
Conveyor 22A	100	500 tph
Conveyor 23A	450	1600 tph
Crusher Surge Bin Capacity	N/A	300 tons
Transfer Surge Bin Capacity	N/A	350 tons
Boiler Surge Bin Capacity	N/A	300 tons
Stacker Reclaimer Hopper Capacity	N/A	30 tons
Series 2 Feeder Capacities	N/A	Min: 150 tons Max: 800 tons
Series 3 Feeder Capacities	N/A	Min: 300 tons Max: 1600 tons
4A and 4B Feeder Capacities	N/A	Min: 300 tons Max: 1600 tons
5A Feeder Capacities	N/A	Min: 525 tons Max: 2100 tons
6A Feeder Capacities	N/A	Min: 150 tons Max: 1600 tons

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Component	Speed	Capacity
Series 8 Feeder Capacities	N/A	Min: 300 tons Max: 1600 tons
9A Feeder Capacities	N/A	Min: 80 tons Max: 500 tons
10B Feeder Capacities	N/A	Min: 80 tons Max: 500 tons
11C Feeder Capacities	N/A	Min: 80 tons Max: 500 tons
12D Feeder Capacities	N/A	Min: 80 tons Max: 500 tons
Feeder AF4A Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF4B Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF5A Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF8D Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF8E Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF8F Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF9A Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF10B Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF11C Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A
Feeder AF12D Belt Speeds	Min: 37 fpm Max: 150 fpm	N/A

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2.3 Place a Coal Conveyor in Service

	ACTION	LOC	VERIFICATION
NOTE:	**The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.**		
1.	VERIFY the coal conveyor is being started in the proper sequence.	C	All downstream conveyors are in service.
2.	VERIFY there is no coal on the conveyor.	L	Conveyor is clear of coal.
3.	DEPRESS the conveyor RESET pushbutton.	C	Ready light illuminates.
4.	VERIFY the conveyor READY light illuminates.	C	Ready light illuminates on coal board.
5.	If the conveyor is to be operated in MANUAL, TURN the conveyor selector switch to MANUAL position.	C	Conveyor starts in MANUAL.
6.	If the conveyor is to be operated in AUTO, TURN the conveyor selector switch to the AUTO position.	C	Conveyor starts in AUTO.
7.	VERIFY the conveyor is operating properly.	C/L	Conveyor motor amps are normal for an empty belt.
8.	If necessary, PLACE additional conveyors in service by repeating step 1 through 7 above.	C/L	Additional conveyors are started as required.

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2.4 Place a Magnetic Separator in Service

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. CHECK the magnetic separator belt for indications of wear.	L	Magnetic separator belt not damaged.
2. PLACE the magnetic separator BYPASS-ON selector switch in the ON position.	C	Magnetic separator running light illuminates.
3. VERIFY the magnetic separator is running properly.	L	a. No unusual noises or vibrations. b. Belt is properly aligned on head and tail pulleys.

2.5 Place a Vibrating Feeder in Service

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY sufficient coal supply for vibrating feeder.	L/C	Coal supply is available to feeder.
2. VERIFY the coal conveyors are ready to receive coal.	C	All coal conveyors from source to destination are in service and operating properly.
3. PLACE the vibrating feeder ON-OFF selector switch in the ON position.	C	Vibrating feeder starts.
4. VERIFY the vibrating feeder is operating properly.	C	a. No unusual noises. b. Manual feed rate is properly set.

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2.6 Automatic Operation in Mode 1

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 1 position.	C	MODE 1 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 2A b. Conveyor 3A or 4A c. Conveyor 5A d. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. DEPRESS the RESET pushbutton for the following feeders: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A and 4B	C	Reset light goes out for each feeder.
4. START magnetic separator 2A.	C	Magnetic separator 2A is running.
5. START magnetic separators 9A or 10A.	C	Magnetic separators 9A and 10A in service.
6. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	Conveyor 9A (or 10A) starts.
7. LOWER telescopic chute into position.	C	Telescopic chute 5A is in position over the dead storage pile.
8. START conveyor 5A by placing its selector switch in the AUTO position.	C	a. Conveyor 5A starts. b. Motor run light illuminate.
9. START conveyor 3A (or 4A) by placing its selector switch in the AUTO position.	C	a. Conveyor 3A (or 4A) starts. b. Motor run light illuminate.
10. START conveyor 2A by placing its selector switch in the AUTO position.	C	a. Conveyor 2A starts. b. Motor run light illuminate.

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ACTION	LOC	VERIFICATION
11. VERIFY the proper surge bin level is selected at the boiler surge bin level controller.	C	Boiler surge bin set at proper level.
12. PLACE each of the following feeders in AUTO: d. Feeders 2A, 2B, 2C, and 2D e. Feeders 3A or 3B f. Feeders 4A or 4B	C	a. Feeders start. b. Feeders 3A or 3B return to manual when feeder 4B is placed in AUTO. c. Motor run light illuminate.
13. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Boiler surge bin level maintained at proper setpoint.
14. VERIFY excess coal is being supplied to the dead storage pile.	C	Excess coal is discharged off of conveyor 5A to the dead storage pile.

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2.7 Automatic Operation in Mode 2

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 2 position.	C	MODE 2 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 2A b. Conveyor 3A or 4A c. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. DEPRESS the RESET pushbutton for the following feeders: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	Reset light goes out for each feeder.
4. START magnetic separator 2A.	C	Magnetic separator 2A is running.
5. START magnetic separators 9A or 10A.	C	Magnetic separators 9A and 10A in service.
6. VERIFY the stacker reclaimer is operating in STACKOUT MODE as per the stacker reclaimer operating procedure.	C	a. Stacker reclaimer operating in stackout mode. b. Conveyor 6A operating in stackout direction.
7. DEPRESS feeder AF5A RESET pushbutton.	C	Reset light goes out for feeder 5A.
8. PLACE feeder AF5A selector switch in the AUTO position.	C	a. Feeder 5A starts. b. Motor run light illuminate.
9. START conveyor 9A 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
10. START conveyor 4A or 3A by placing its selector switch in the AUTO position.	C	a. Conveyor 4A or 3A starts. b. Motor run light illuminate.

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ACTION	LOC	VERIFICATION
11. START conveyor 2A by placing its selector switch in the AUTO position.	C	a. Conveyor 2A starts. b. Motor run light illuminate.
12. VERIFY the proper surge bin level is selected at the boiler surge bin level controller.	C	Boiler surge bin set at proper level.
13. PLACE each of the following feeders in AUTO: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	a. Feeders start. b. Feeders 3A or 3B return to manual when feeder 4B is placed in AUTO. c. Motor run light illuminate.
14. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Boiler surge bin level maintained at proper setpoint.
15. VERIFY excess coal is being supplied to the stacker reclaimer (stackout mode).	C	Excess coal is discharged off of conveyor 6A to the stackout pile.

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2.8 Automatic Operation in Mode 3

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 3 position.	C	MODE 3 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 2A b. Conveyor 3A or 4A c. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. DEPRESS the RESET pushbutton for the following feeders: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	Reset light goes out for each feeder.
4. START magnetic separator 2A.	C	Magnetic separator 2A is running.
5. START magnetic separators 9A or 10A.	C	Magnetic separators 9A and 10A in service.
6. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
7. START conveyor 4A or 3A by placing its selector switch in the AUTO position.	C	a. Conveyor 4A starts. b. Motor run light illuminate.
8. START conveyor 2A by placing its selector switch in the AUTO position.	C	a. Conveyor 2A starts. b. Motor run light illuminate.
9. VERIFY the proper surge bin level is selected at the transfer surge bin level controller.	C	Transfer surge bin set at proper level.
10. PLACE each of the following feeders in AUTO: a. Feeders 2A, 2B, 2C, and 2D b. Feeders 3A or 3B c. Feeders 4A or 4B	C	a. Feeders start. b. Motor run light illuminate.
11. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Transfer surge bin level maintained at proper setpoint by feeders 3A or 3B.

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2.9 Automatic Operation in Mode 4

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 4 position.	C	MODE 4 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 6A (Reclaim) b. Conveyor 9A or 10A	C	Reset light goes out for each conveyor.
3. VERIFY all dust collection equipment is ready for service for conveyors 6A, 9A, and 10A.	C/L	Dust collection equipment ready for service.
4. START magnetic separators 9A or 10A.	C	Magnetic separator 9A or 10A in service.
5. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
6. POSITION flowgate 7A to direct coal to conveyor 9A (or 10A).	C	Coal directed off of conveyor 6A will be transferred on to conveyor 9A (or 10A).
7. START conveyor 6A in the reclaim direction by placing its selector switches in the RECLAIM and AUTO positions.	C	Conveyor 6A starts in reclaim direction.
8. VERIFY the stacker reclaimer is operating in reclaim mode as per the Stacker Reclaimer operating procedure.	C	Stacker reclaimer operating in reclaim mode.
9. PLACE feeder 6A selector switch in AUTO.	C	Feeder starts.
10. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Coal feed rate equals plant burn rate.

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2.10 Automatic Operation in Mode 5

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. With the coal handling equipment in a shutdown state, PLACE the MODE selector pistol grip in the MODE 5 position.	C	MODE 5 selected.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 9A or 10A b. Conveyor 23A	C	Reset light goes out for each conveyor.
3. START magnetic separators 9A or 10A.	C	Magnetic separator 9A or 10A in service.
4. START conveyor 9A (or 10A) by placing its selector switch in the AUTO position.	C	a. Conveyor 9A (or 10A) starts. b. Motor run light illuminate.
5. POSITION flowgate 8C to direct coal to conveyor 9A (or 10A).	C	Coal directed off of conveyor 23A will be transferred on to conveyor 9A (or 10A).
6. START conveyor 23A by placing its selector switch in the AUTO position.	C	a. Conveyor 23A starts. b. Motor run light illuminate.
7. DEPRESS the RESET pushbutton for the following feeders: a. Feeder 8D or 8E or 8F	C	Reset light goes out for each feeder.
8. PLACE feeder 8D (or 8E or 8F) selector switch in AUTO.	C	a. Feeder starts. b. Motor run light illuminate.
9. VERIFY coal is being supplied to the coal conveyors at the proper speed by the feeders.	C	Boiler surge bin level is maintained at setpoint.

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2.11 Filling the Unit 1 South Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the south silos require filling.	C	South silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 11A b. Conveyor 12A c. Conveyor 13A	C	Reset light goes out for each conveyor.
3. PLACE the south silo control gates in OPEN.	C	Silos D, C, and B gates are in OPEN.
4. VERIFY south silo gate A is open.	L	Silo gate A is open.
5. Start conveyors 13A, 12A and 11A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (A-D) that is in service.	C	Determine end mill / feeder (A-D) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 9A RESET pushbutton.	C	Ready light illuminates for feeder 9A.
9. START feeder 9A by placing its selector switch in the AUTO position.	C	a. Feeder 9A starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to D silo.	C	Silo D level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 9A.

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2.12 Filling the Unit 1 North Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the north silos require filling.	C	North silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 14A b. Conveyor 15A c. Conveyor 16A	C	Reset light goes out for each conveyor.
3. PLACE the north silo control gates in OPEN.	C	Silos H, G, and F gates are in OPEN.
4. VERIFY north silo gate E is open.	L	Silo gate E is open.
5. Start conveyors 16A, 15A and 14A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (E-H) that is in service.	C	Determine end mill / feeder (E-H) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 10B RESET pushbutton.	C	Ready light illuminates for feeder 10B.
9. START feeder 10B by placing its selector switch in the AUTO position.	C	a. Feeder 10B starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to H silo.	C	Silo H level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 10B.

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2.13 Filling the Unit 2 South Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the south silos require filling.	C	South silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 17A b. Conveyor 18A c. Conveyor 19A	C	Ready light illuminates for each conveyor.
3. PLACE the south silo control gates in AUTO.	C	Silos 2D, 2C, and 2B gates are in AUTO.
4. VERIFY south silo gate A is open.	L	Silo gate 2A is open.
5. Start conveyors 19A, 18A and 17A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (A-D) that is in service.	C	Determine end mill / feeder (A-D) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 12D RESET pushbutton.	C	Ready light illuminates for feeder 12D.
9. START feeder 12D by placing its selector switch in the AUTO position.	C	a. Feeder 12D starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to D silo.	C	Silo D level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 12D.

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2.14 Filling the Unit 2 North Silos

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY the north silos require filling.	C	North silo levels are low.
2. DEPRESS the RESET pushbutton for the following coal conveyors: a. Conveyor 20A b. Conveyor 21A c. Conveyor 22A	C	Reset light goes out for each conveyor.
3. PLACE the north silo control gates in AUTO.	C	Silos 2H, 2G, and 2F gates are in AUTO.
4. VERIFY north silo gate 2E is open.	L	Silo gate 2E is open.
5. Start conveyor 22A, 21A and 20A by placing selector switches in AUTO.	C	a. Motor run light illuminate. b. Conveyors start.
6. IDENTIFY end coal silo (E-H) that is in service.	C	Determine end mill / feeder (E-H) that is in service.
7. SET silo level setpoint on Foxboro display manager.	C	Silo setpoint level entered.
8. DEPRESS the feeder 11C RESET pushbutton.	C	Ready light illuminates for feeder 11C.
9. START feeder 11C by placing its selector switch in the AUTO position.	C	a. Feeder 11C starts. b. Motor run light illuminate.
10. VERIFY coal is supplied to H silo.	C	Silo H level increases on coal board.
11. VERIFY coal carries over, once full, to next silo until the determined setpoint silo reached.	C	Silo level on the down stream silo begins to increase on the coal board.
12. VERIFY feed rate is controlling once it reaches the in silo.	C	Silo setpoint being maintained by feeder 11C.

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3.0 SYSTEM NORMAL OPERATION

3.1 Coal Conveying System Routine Checks

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. CHECK all indicators on the coal board.	C	All indicators within normal operating parameters.
2. INSPECT the magnetic separators and belt for proper operation.	L	Magnetic separator belt discarding tramp iron and other ferrous materials.
3. Monitor the conveyor drive assemblies.	L	Conveyor drive motors, speed reducers and couplings operating properly.
4. INSPECT belt scrapers to ensure coal is being cleaned from the conveyors.	L	Coal conveyor scrapers operating properly.
5. MONITOR all conveyor motors for proper operation.	L/C	a. No unusual noises or vibrations. b. Motor amps normal. c. Motor temperature normal. d. Dual drive conveyor motors operating at same current.
6. VERIFY the coal conveyor scales are operating properly.	L/C	Coal scales recording coal weight.
7. VERIFY the surge bins are being maintained at the proper level.	C	Surge bin levels normal.

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4.0 SYSTEM SHUTDOWN INSTRUCTIONS

4.1 Shutdown a Coal Conveyor and Magnetic Separator

ACTION	LOC	VERIFICATION
NOTE: The LOC column in this procedure specifies where the associated ACTION step is taken. A "C" step is performed in the control room, an "L" step is performed locally, and an L/P step is performed at a local panel. A "C/L" or "L/C" step indicates a combination of control room and local activities.		
1. VERIFY that coal transferring operation are completed.	C/L	Coal conveyor is no longer needed for service.
2. VERIFY that all operating coal conveyors are empty of coal.	L	No coal is on conveyor.
3. Starting with the last conveyor in the coal flow path, DEPRESS the stop pushbutton.	C	a. Conveyor stops. b. Reset light illuminate.
4. Stop magnetic separator by placing selector switch in bypass.	C	Magnetic separator is shutdown.

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5.0 SYSTEM ALARM RESPONSES

5.1 Summary of Alarms

None

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Table 1 - Prestart Power Lineup Checklist

Location	Description	Voltage	Position
12B3	Conveyor 1A Drive Motor	4160	On
12B3	Conveyor 2A Drive Motor	4160	On
12B3	Conveyor 3A Drive Motor	4160	On
12B4	Conveyor 4A Drive Motor	4160	On
12B4	Conveyor 5A Drive Motor	4160	On
12B3	Conveyor 6A Drive Motor	4160	On
12B1	Conveyor 9A Drive Motor 1	4160	On
12B1	Conveyor 9A Drive Motor 2	4160	On
12B2	Conveyor 10A Drive Motor 1	4160	On
12B2	Conveyor 10A Drive Motor 2	4160	On
1C26	Conveyor 11A Drive Motor	480	On
1C26	Conveyor 12A Drive Motor	480	On
1C1	Conveyor 13A Drive Motor	480	On
1C26	Conveyor 14A Drive Motor	480	On
1C26	Conveyor 15A Drive Motor	480	On
1C2	Conveyor 16A Drive Motor	480	On
2C26	Conveyor 17A Drive Motor	480	On
2C26	Conveyor 18A Drive Motor	480	On
2C1	Conveyor 19A Drive Motor	480	On
2C26	Conveyor 20A Drive Motor	480	On
2C26	Conveyor 21A Drive Motor	480	On
2C2	Conveyor 22A Drive Motor	480	On
12B4	Conveyor 23A Drive Motor	4160	On
1C15	Feeder 1A Drive Motor	480	On
1C25	Feeder 1B Drive Motor	480	On
1C15	Feeder 1C Drive Motor	480	On
1C25	Feeder 1D Drive Motor	480	On
12C41	Feeder 2A Drive Motor	480	On
12C31	Feeder 2B Drive Motor	480	On
12C41	Feeder 2C Drive Motor	480	On
12C31	Feeder 2D Drive Motor	480	On
12C31	Feeder 3A Drive Motor	480	On
12C41	Feeder 3B Drive Motor	480	On
12C31	Feeder 4A Drive Motor	480	On
12C31	Feeder 4B Drive Motor	480	On
12C31	Feeder 5A Drive Motor	480	On
12C42	Feeder 8D Drive Motor	480	On
12C43	Feeder 8E Drive Motor	480	On
12C43	Feeder 8F Drive Motor	480	On
1C26	Feeder 9A Drive Motor	480	On

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Location	Description	Voltage	Position
1C26	Feeder 10B Drive Motor	480	On
2C26	Feeder 11C Drive Motor	480	On
2C26	Feeder 12D Drive Motor	480	On
12C31	Magnetic Separator 2A	480	On
1C26	Magnetic Separator 9A	480	On
2C26	Magnetic Separator 10A	480	On
12C42	Telescopic Chute 5A	480	On
12C33	Telescopic Chute 1A	480	On
12B3	Crusher 1A	4160	Off
12B4	Crusher 2A	4160	Off

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6.0 SIGN OFF AND RECORD OF REVISIONS

Craig Brown _____ 9/11/02
REVIEWED BY: OPERATOR DATE

John G. Tinin _____ 9/11/02
APPROVED BY: OPERATIONS SUPERVISOR DATE

RECORD OF REVISIONS

Revision	Explanation	Date
Rev. 0	Initial Issue	08/02/95
Rev. 2	Completed revision. On a high level removed all reference to dust collectors in both SD & OP. Removed OP 5.0 System Abnormal Conditions. Changed OP 2.11-2.14Changed title form Coal Yard to Fuel Handling	09/11/02

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1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this procedure is to familiarize the operator with the start-up, normal operation, and shutdown of the Coal Board System. The following components are discussed in detail:

- Coal Conveyors
- Magnetic Separators
- Telescopic Chute
- Surge Bins
- Vibrating Feeders
- Crushers (No Longer In Service)
- Coal Storage

1.2 System Overview

The Coal Board System transports, and stores coal for use in Unit 1 and 2 boilers. The system begins at the rail receiving hopper which receives coal from the rotary car dumper.

The Coal Board System contains equipment to process the coal prior to storage in the Unit 1 and 2 silos. The coal is then transported to either the stacker/reclaimer, the dead storage pile, or directly to the Unit 1 and 2 silos.

1.2.1 System Primary Flowpath

The Coal Board System flowpath begins at the rail receiving hopper which receives coal from the rotary car dumper. The four rail receiving hopper sections feed the coal onto conveyor 1A which transfers the coal to the live storage pile. Four hoppers under the live storage pile transfer the coal to conveyor 2A which conveys the coal to the crusher surge bin. The crusher surge bin maintains a source of raw coal for supplying the crushers at a constant rate by vibrating feeders. Note: ISES Crushers are no longer utilized.

Coal is transferred from the crusher outlet to conveyor 3A and 4A. These conveyors run side by side and transfer the coal to the transfer surge bin. The coal stored in the transfer surge bin can be supplied to several areas. Coal can be transferred to the stacker/reclaimer by conveyor 6A. Coal can also be conveyed from the transfer surge bin to the dead storage pile by conveyor 5A. Finally, coal can also be conveyed to the boiler surge bin by conveyors 9A and 10A.

Coal from the dead storage pile is collected by three hoppers which discharge onto conveyor 23A. Conveyor 23A transfers the coal to conveyors 9A and 10A which convey the coal to the boiler surge bin.

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The Coal Board System continues to convey the coal from the boiler surge bin to the Unit 1 and 2 silos. Conveyor 11A transfers coal from the boiler surge bin to conveyor 12A. Conveyor 12A transfers coal to conveyor 13A which dumps the coal into silos 1A through 1D. Conveyor 14A transfers coal from the surge bin to conveyor 15A. Conveyor 15A transfers coal to conveyor 16A which dumps the coal into silos 1E through 1H. Conveyor 17A transfers coal from the boiler surge bin to conveyor 18A. Conveyor 18A transfer coal to conveyor 19A which dumps the coal in silos 2A through 2D. Finally, conveyor 20A transfers coal from the boiler surge bin to conveyor 21A, and conveyor 21A transfers the coal to conveyor 22A. Conveyor 22A dumps the coal in silos 2E through 2H.

1.2.2 System Secondary Flowpath(s)/Components

Fire Protection

Fire protection equipment is provided throughout the coal handling equipment area. The fire protection equipment consists of detection and extinguishing equipment. This equipment is discussed in detail in the Fire Protection System. Below is a list of the areas in which each fire system is located.

Number	Location
Fire System 7	Under 1A & 2A Conveyor
Fire System 6	Under 1A & 2A Conveyor
Fire System 5A	Crusher Tower NW Corner
Fire System 5B	Crusher Tower NW Corner
Fire System 5C	Crusher Tower NW Corner
Fire System 17	Dead Storage Vault 1A
Fire System 18	Dead Storage Reclaim Hopper 2
Fire System 19	Dead Storage Reclaim Hopper 3
Fire System 4A	Transfer Tower 1A SW Corner
Fire System 4B	Transfer Tower 1A SW Corner
Fire System 4C	Transfer Tower 1A SW Corner
Fire System 4D	Transfer Tower 1A SW Corner
Fire System 4E	Transfer Tower 1A SW Corner
Fire System 1	Under Transfer Tower 2A
Fire System 2	Under Transfer Tower 2A
Fire System 3A	Under Transfer Tower 2A
Fire System 3B	Under Transfer Tower 2A

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Coal Handling System Sumps

Various sumps are located throughout the coal handling equipment area to collect and discharge waste water and rain water runoff. Below is a list of the sump pumps located in various areas throughout the coal handling equipment area.

Number	Location
Sump Pump 1	Rail Receiving Hopper
Sump Pump 2	Rail Receiving Hopper
Toyo Grinder Pump	Rail Receiving Hopper
Sump Pump 3	Live Storage Area
Sump Pump 4	Live Storage Area
Toyo Grinder Pump	Live Storage Area
Sump Pump 5	Dead Storage Vault 1A
Sump Pump 6	Dead Storage Vault 1A
Toyo Grinder Pump	Dead Storage Vault 1A
Sump Pump 7	Dead Storage Reclaim Hopper 2
Sump Pump 8 (disconnected)	Dead Storage Reclaim Hopper 2
Toyo Grinder Pump	Dead Storage Reclaim Hopper 2
Sump Pump 9	Dead Storage Reclaim Hopper 3
Sump Pump 10 (disconnected)	Dead Storage Reclaim Hopper 3
Sump Pump 11	Dead Storage Reclaim Hopper 4
Sump Pump 12 (disconnected)	Dead Storage Reclaim Hopper 4

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2.0 MAJOR COMPONENTS AND SUBSYSTEMS

2.1 Coal Conveyors

2.1.1 Function

The function of the coal conveyors is to transfer coal from a supply point to a final destination. The discussion in this section is applicable to the following conveyors:

- Coal Conveyor 1A
- Coal Conveyor 3A
- Coal Conveyor 5A
- Coal Conveyor 9A
- Coal Conveyor 11A
- Coal Conveyor 13A
- Coal Conveyor 15A
- Coal Conveyor 17A
- Coal Conveyor 19A
- Coal Conveyor 21A
- Coal Conveyor 23A
- Coal Conveyor 2A
- Coal Conveyor 4A
- Coal Conveyor 6A
- Coal Conveyor 10A
- Coal Conveyor 12A
- Coal Conveyor 14A
- Coal Conveyor 16A
- Coal Conveyor 18A
- Coal Conveyor 20A
- Coal Conveyor 22A

NOTE: Conveyors 13A, 16A, 19A and 22A are drag conveyors.

2.1.2 Detailed Description

Each conveyor belt consists of a rubber sheet (Figure 2.1) joined together end to end by a splice to form a continuous loop. Upper and lower idlers support and guide the conveyor belts and the upper idlers also support coal on the belts. Each upper idler consists of three separate segments, a center segment and two outer segments. The outer segments are angled so that the overall idler assembly forms a V or U shape, keeping coal on the belt. The lower idlers are not V or U shaped and are made up of only one segment. Each coal conveyor has many more upper idlers than lower idlers due to the weight of the coal supported by the upper idlers. As shown in Figure 2.2, there are several different types of idlers on a typical coal belt.

The conveyor belts are equipped with belt cleaners, or scrapers, located on the underside of the belt just after the belt discharges the coal. The cleaner consists of spring loaded scraper blades that ride on the belt and remove coal. The coal falls into the conveyor discharge chute or onto the next belt (depending on belt arrangement and function). Due to the abrasive nature of coal, the scraper blades wear away and must be periodically replaced.

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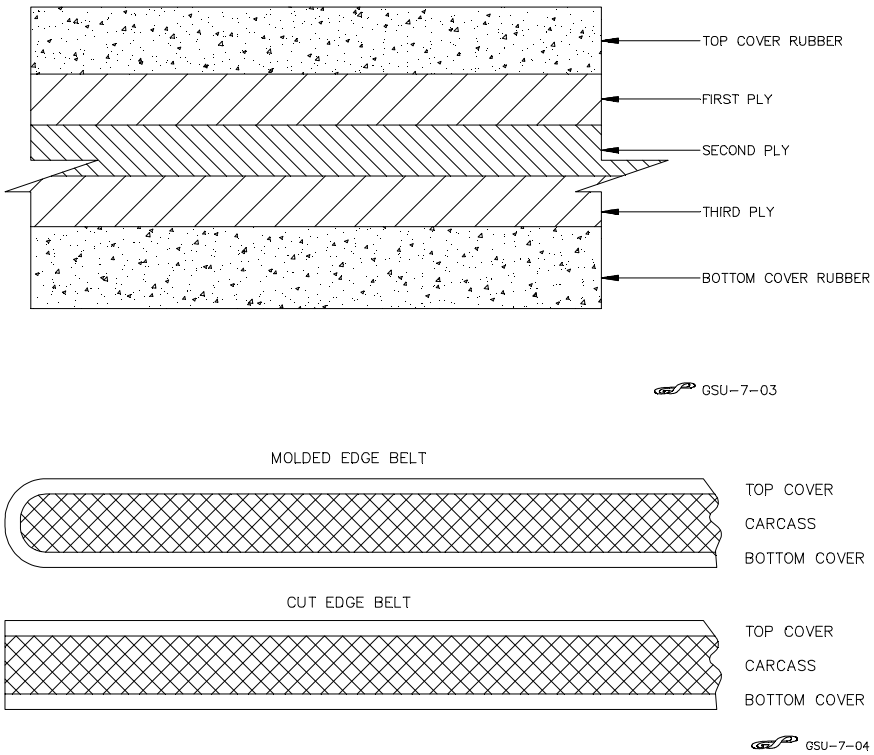

Figure 2.1 Conveyor Belt Construction

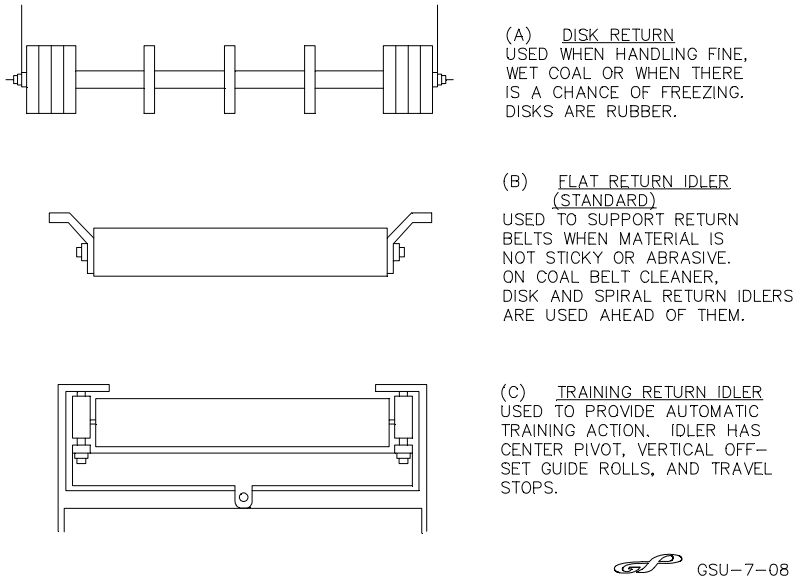

Figure 2.2a Types of Idlers - Return Idlers

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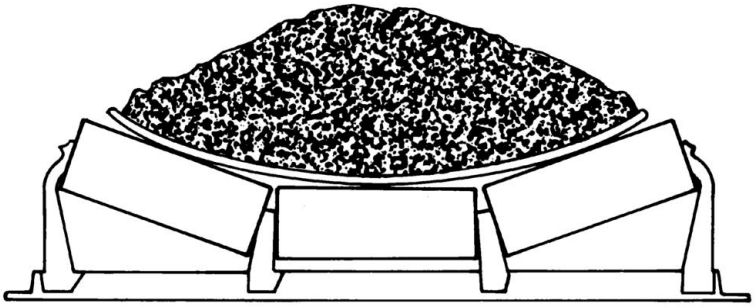
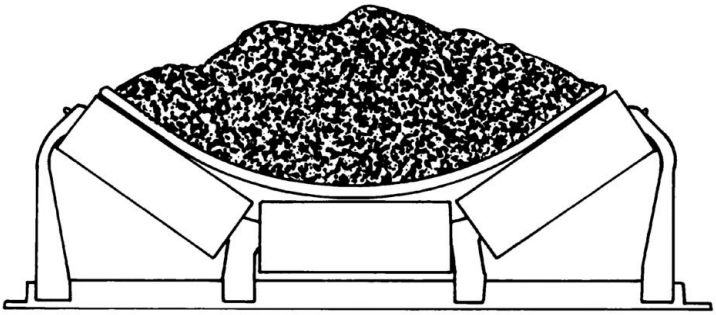
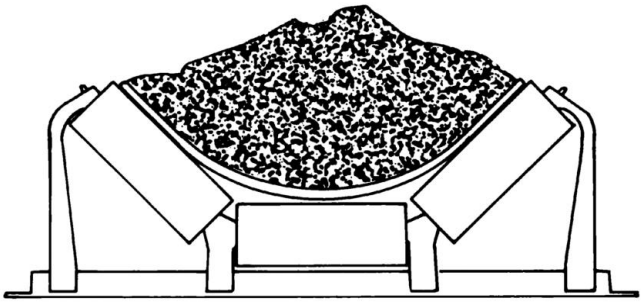


20°



35°



45°

CARRYING CAPACITY OF 48-INCH-WIDE BELT BASED ON 50 POUND-PER-CUBIC FOOT MATERIAL AND 500 FOOT-PER-MINUTE BELT SPEED:

20° TROUGHING IDLER	1175 TONS PER HOUR
35° TROUGHING IDLER	1353 TONS PER HOUR
45° TROUGHING IDLER	1460 TONS PER HOUR

Figure 2.2b Types of Idlers - Troughing Idlers

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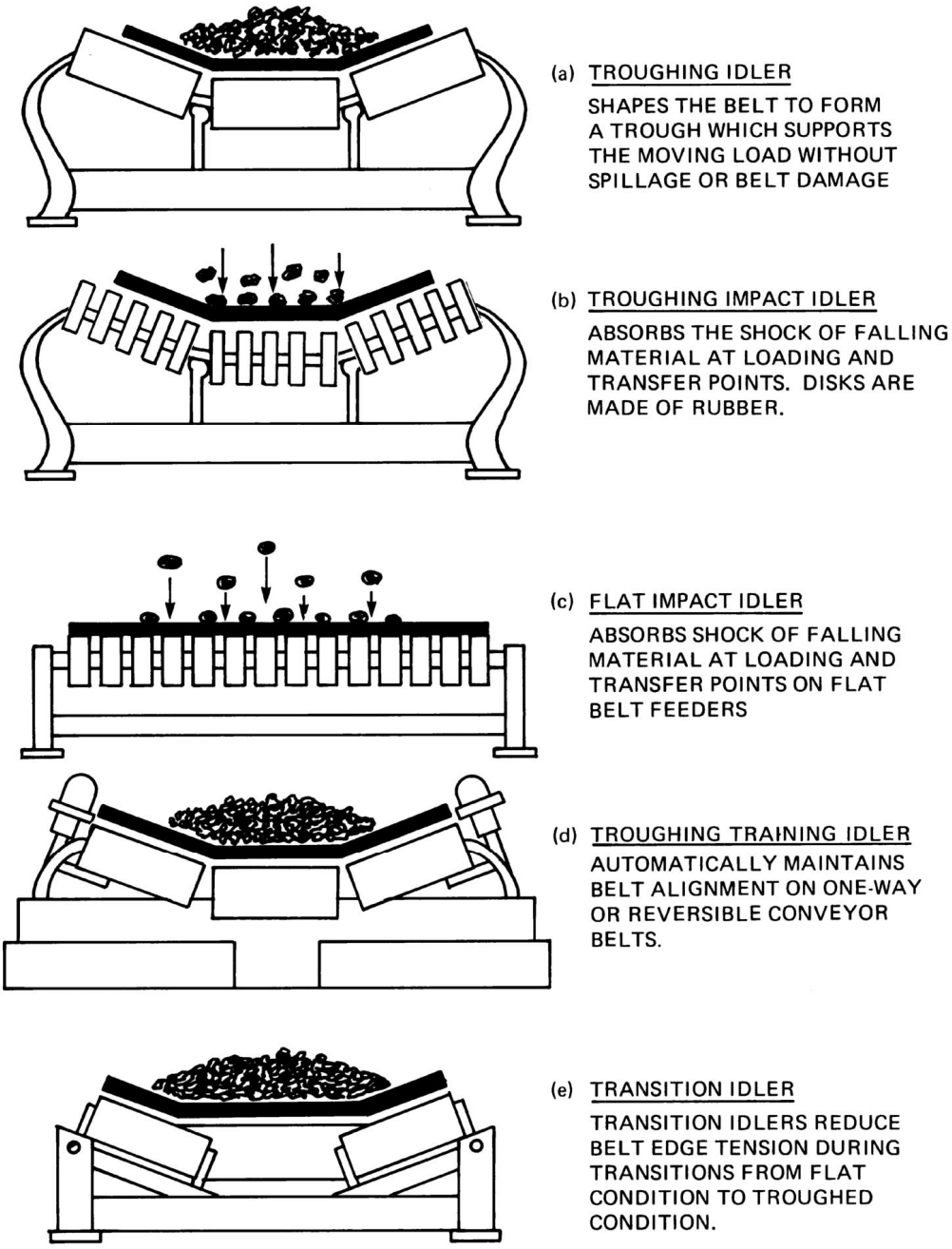

Figure 2.2c Types of Idlers - Carrying Idlers

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Two pulleys are located at ends of the conveyor belts, with additional pulleys located anywhere the belt changes direction or slope. The pulleys are constantly in full contact with the belt. The pulleys are large steel cylinders supported at each end by a grease lubricated, taper roller bearing. The conveyor drive motor is usually connected at the discharge end of the belt, also referred to as the head pulley.

Each conveyor belt is equipped with tensioners to compensate for expansion and contraction of the belt due to temperature changes and the gradual belt stretching over time. A simplified gravity take-up system is shown in Figure 2.3. Each tensioner automatically adjusts for changes in the length of the belt. Two tensioner arrangements are used, one for horizontal belts only and one for both horizontal and sloping belts. In both arrangements, the tensioner consists of a pulley, cables, and a counterweight on a horizontal belt tensioner. A horizontal cable is attached to the tail pulley (non motor driven pulley) and the counterweight pulleys. The cable pulleys change the direction of the counterweight so that it hangs vertically. The weight exerts a force on the tail pulley in the outward direction (perpendicular to the belt) to maintain the belt tension.

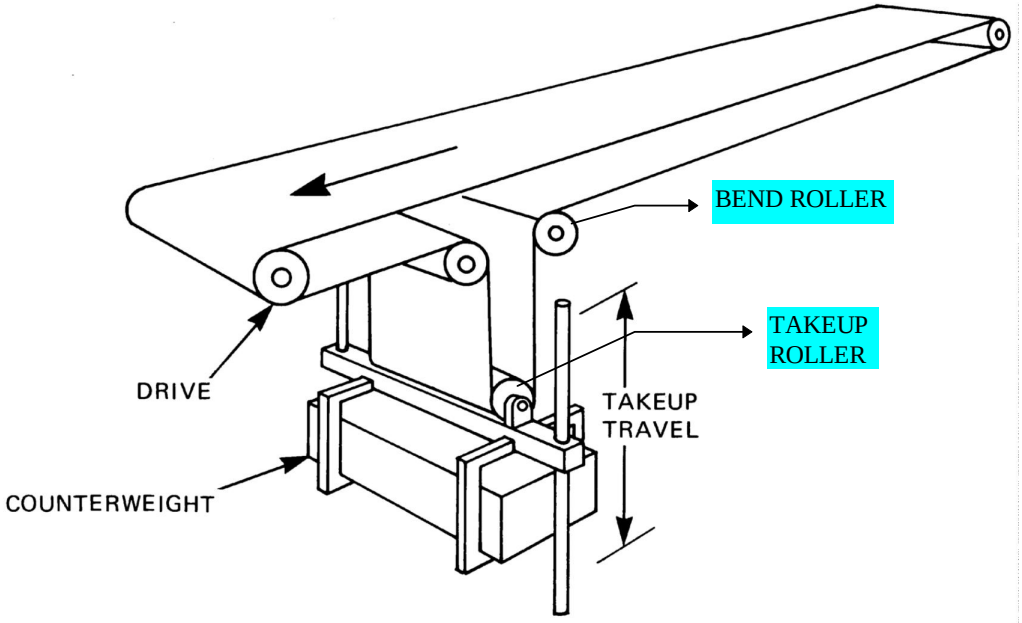

Figure 2.3 Gravity Takeup System

On a vertical belt tensioner, the tensioner is located near the head pulley along the interior of the conveyor. The tensioner consists of three pulleys, a counterweight, and a cable. The belt changes direction over the pulleys three times, from the normal slope to vertically downward to vertically upward and then back to the original slope. The counterweight is attached to the bottom pulleys by a cable to exert an outward and downward movement on the belt.

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Each conveyor belt is equipped with an individual drive motor, usually connected to the head pulley. (On telescopic chute belts, the drive motor is connected to the lower tensioner pulley.) The conveyors are equipped with two different drive motor arrangements. The horizontal conveyors are driven by a motor and chain (or belt) arrangement. In this arrangement, the motor shaft drives the motor gearbox shaft, which in turn drives the chain. The chain drives the head pulley, which drives the conveyor belt. Speed reduction occurs in both the motor gearbox and the chain drive sprockets. The motor is equipped with grease lubricated inboard and outboard bearings. The motor gearbox and chain drives are fully enclosed in oil tight housings and are splash lubricated. The enclosures are equipped with oil fill and drain plugs and a lube oil level sightglass.

The sloping conveyors are driven by an electric motor and speed reducer arrangement. This arrangement is similar to the one described above, however, the motor gearbox drives a speed reducer in place of the chain sprocket or pulleys. The speed reducer is situated parallel to the head pulley and transmits power from the motor to the conveyor belt head pulley. Speed reduction occurs in both the motor gearbox and speed reducer. The motor is equipped with grease lubricated inboard and outboard bearings. The motor gearbox and speed reducer are fully enclosed in oil tight housings and are splash lubricated. The enclosures are equipped with oil fill and drain plugs and a lube oil level sightglass.

All of the sloping conveyor belts are equipped with a holdback, or backstop, that prevents the belt from slipping when at rest. The holdback is mounted on the head pulley, and is splash lubricated in an oil tight housing.

Each conveyor belt is equipped with pull cords for use during emergencies. The pull cords are braided steel cables coated in a red plastic covering. Pull cables are located along the length of the belt where people have access. Attached to each side of the pull cable is a flag and a stop switch. The pull cords will stop the associated belt and all upstream belts and equipment when pulled. The attached flag will indicate if a pull cord is pulled.

The conveyors are covered on the sides and top by hoods to minimize dust emissions.

Several of the conveyors are equipped with scales to measure the coal being conveyed. The scale measurements along with the feed rate and flow totalizers allow calculations to be made to determine the total tonnage conveyed. The following conveyors are equipped with scales:

- Conveyor 2A
- Conveyor 3A
- Conveyor 4A
- Conveyor 9A
- Conveyor 10A
- Conveyor 11A

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- Conveyor 14A
- Conveyor 20A
- Conveyor 17A

Several conveyors are grouped together to transfer coal from the boiler surge bin to the individual silos. Conveyors 11A, 12A, and 13A are used to fill the Unit 1 south silos (1A through 1D), and are referred to as the Unit 1 south silo filling system. Conveyors 14A, 15A, and 16A fill the Unit 1 north silos (1E through 1H) and are called the Unit 1 north silo filling system. Similarly, conveyors 17A, 18A, and 19A make up the Unit 2 south silo filling system (silos 2A through 2D) and conveyors 20A, 21A, and 22A make up the Unit 2 north silo filling system (silos 2E through 2H).

2.1.3 Operation, Control, and Safety

The Control Room Operator uses the coal board (Figure 2.4), to control the movement of coal from the live storage pile to the silos and other various areas in the coal yard. The coal board, located in the control room, is used to select the plant equipment to be run, the storage location for incoming coal, the rate of coal flow, the source of coal to the pulverizer silos, the automatic reclaim system operating mode, and purging the reclaim system.

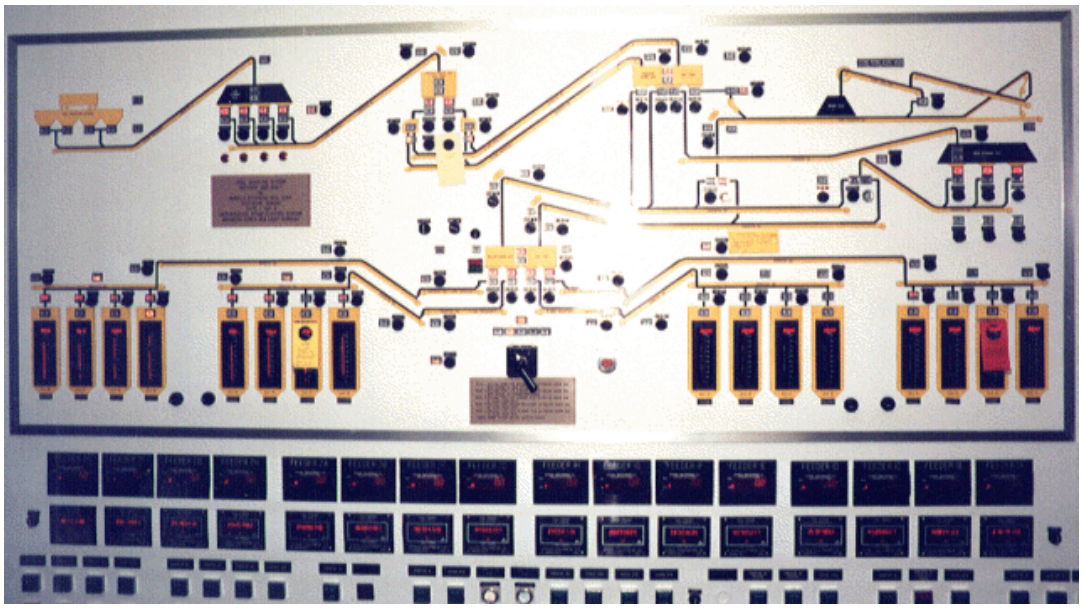

Figure 2.4 Coal Board

All of the conveyors are operated using OFF-MANUAL-AUTO selector switches located on the control board. A RUNNING indicator light is also supplied for each conveyor. The conveyors

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can be operated manually using the OFF and MANUAL positions. In the AUTO position, the conveyor will be controlled based on the OPERATING MODE selected.

When a conveyor is placed in service, a buzzer and/or siren will sound for 10 seconds prior to the conveyor motor starting. This is to alert all personnel that a conveyor is preparing to start. If a conveyor fails to start, the cause for the failure to start must be investigated and remedied prior to attempting to restart the motor. During conveyor startup, motor current should be monitored. Excessive starting current may be due to belt misalignment, coal on the conveyor, or may be indicative of motor problems. Also, on conveyors with two drive motors, the motor current should be matched on each motor. Matching the current ensures that each motor is carrying an equal load.

Note: The OPERATING MODE selector is not currently utilized to automatically transfer coal. The information listing how the MODE selections operate is for informational purposes only.

The OPERATING MODE is selected based on the chosen starting and end point for the coal. A pistol grip switch in the middle of the control board is used to select any of the five operating modes. Operating mode 1 transfers coal from the live storage pile to the crusher surge bin on conveyor 2A. The coal flows from the crusher surge bin to conveyors 3A and 4A, and is conveyed to the transfer surge bin. The majority of the coal from the transfer surge bin is conveyed by conveyor 9A or 10A to the boiler surge bin to maintain the pulverizers' supply. Excess coal (excess coal refers to the quantity above that needed for the current plant burn rate) is supplied from the transfer surge bin to conveyor 5A. This coal is deposited through the telescopic chute to the dead storage pile.

Operating mode 1 is placed in service by first depressing the RESET pushbutton for the following equipment:

- Conveyors 2A, 3A, 4A, 5A, 9A, 10A
- Feeders 2A, 2B, 2C, 2D, 3A, 3B, 4A, 4B

When all of the equipment is reset, a READY light will illuminate and the equipment selector switches can be switched to the AUTO position. The conveyors must be started in the proper sequence. The first conveyor to be started is the last conveyor in the chain (9A and 10A). Note that when parallel conveyors are operated simultaneously (i.e., conveyors 9A and 10A), one conveyor must be operated in AUTO and the other in MANUAL. Both conveyors can also be run in MANUAL. The remaining conveyors are started in reverse order of coal flow, with conveyor 2A being the last conveyor to be started.

The magnetic separators are placed in service, once all of the conveyors are in service and the feeders are started by placing their selector switches in the AUTO position. As long as the feeders are in AUTO, a preset quantity of coal will be delivered to the surge bin. The operator can adjust the amount of coal in the surge bin by raising or lowering the bin level setpoint. The coal feed rate will automatically increase as the surge bin level decrease below setpoint. (Note that if

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feeder AF4B is placed in AUTO operation, then feeders 3A and 3B will default to manual feed rate control. AF4B will be controlled based on the transfer surge bin level.)

Operating mode 1 can also be selected for manual operation. As with the automatic operation described above, the equipment must be first reset to get the READY light to illuminate. The conveyors must be started in the reverse order of coal flow, and each is started by depressing the START pushbutton. The buzzer and/or siren will sound for 10 seconds and the conveyor will start. Once started, the MOTOR RUN light will illuminate. When all of the conveyors are operating, the permissive to start the feeders will be made, and the feeders can be placed in service.

During manual operation, the feed rate must be manually set to maintain the surge bin level. The surge bin level will not control the coal flow. However, if the surge bin reaches the high level the feeders will automatically stop. If the surge bin level continues to increase to the high-high level, both the feeders and conveyors will shutdown to prevent spilling coal from the surge bin. Once the surge bin level has decreased to below the high level, the conveyors and feeders can be reset and restarted.

Since excess coal is diverted to the dead storage pile through the telescopic chute, the telescopic chute must be properly positioned to prevent fugitive dust emissions. The telescopic cute is raised and lowered using the control buttons described in the appropriate section below. When the telescopic chute reaches its top most position, coal feeder 4B will automatically stop. If the coal level reaches the telescopic chute when it is in to top most position, conveyor 5A will automatically stop to prevent filling the telescopic chute and causing possible damage.

Operating mode 2 transfers coal from the live storage pile to the crusher surge bin on conveyor 2A. The coal flows from the crusher surge bin to conveyors 3A and 4A, and is conveyed to the transfer surge bin. The majority of the coal from the transfer surge bin is conveyed by conveyor 9A (or 10A) to the boiler surge bin to maintain the pulverizers' supply. Excess coal is supplied from the transfer surge bin to conveyor 6A. This coal is stacked out by the stacker reclaimer to the stack out coal pile.

Operating the coal conveying equipment in operating mode 2 is the same as that described for operating mode 1 above with the exception that excess coal is stacked out by the stacker reclaimer. Therefore, conveyor 5A will not be operated and conveyor 6A will be operated in the stack out mode. To operate automatically, the stacker reclaimer must be in service in the stack out mode. (The stacker reclaimer operation is described in the Stacker Reclaimer System.) With the stacker reclaimer in service, the starting permissive for conveyor 6A will be met. Conveyor 6A's STACKOUT-RECLAIM switch must be placed in the stackout position and the conveyor can be started. The conveyor 6A feeder, AF5A can be started after conveyor 6A is running. (Note that when feeder AF5A is operated in AUTO, feeders 3A and 3B will default to manual feed rate control using the manual feed rate controller on the control board. AF5A feeder speed will be controlled automatically based on the coal level in the transfer surge bin.)

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Operating mode 3 transfers coal from the live storage pile to the crusher surge bin on conveyor 2A. The coal flows from the crusher surge bin to conveyors 3A and 4A, and is conveyed to the transfer surge bin. All of the coal is then supplied to the boiler surge bin by conveyor 9A (or 10A).

Operating the coal conveying equipment in the operating mode 3 position is the same as that described for operating mode 1, however, coal feeder 3A and 3B are controlled so that no excess coal is supplied to the transfer surge bin. Coal feeders 3A and 3B are operated in AUTO and maintain the transfer surge bin level at setpoint.

During manual operation in operating mode 3, the live storage pile feeders (2A, 2B, 2C and 2D) must be set to supply the same amount of coal to the crusher surge bin as feeders 3A and 3B are removing from the crusher surge bin. This will maintain the proper level in the surge bin throughout the manual operation.

Operating mode 4 conveys coal from the surge hopper (located on the stacker reclaimer) to conveyor 6A operating in reclaim mode. Conveyor 6A discharges the coal to conveyor 9A (or 10A) which transfers the coal to the boiler surge bin. Operating mode 4 is used for reclaiming operations.

Operating mode 4 reclaims coal using the stacker reclaimer. Automatic operation is achieved by placing the proper coal handling equipment in service in the necessary sequence. First, the magnetic separator for conveyor 9A (or 10A) is started. Flow gate 7A must be positioned to direct coal flow to the proper conveyor (9A or 10A) which will makeup the conveyor 6A start permissive. ***(Note: 6A magnetic separator should be put in service prior to starting 6A conveyor.)*** With conveyor 6A's selector switch in the RECLAIM position, it can be started. Finally, feeder AF6A is automated and started to begin supplying coal to conveyor 6A from the stacker surge hopper. (Make up coal is provided to the surge hopper by the reclaiming action of the stacker reclaimer.) AF6A's feed rate will adjust to maintain the proper boiler surge bin level.

Operating manually in mode 4 requires that the same conveyors discussed above (6A and 9A or 10A) be started in MANUAL with conveyor 6A operating in the reclaim direction. Feeder AF6A is then started and can be controlled from the coal board or from the stacker reclaimer. AF6A's feed rate should be set to maintain the boiler surge bin at the proper level.

Operating mode 5 conveys coal from the dead storage pile to conveyor 23A. Conveyor 23A discharges coal onto conveyor 9A (or 10A) which discharges into the boiler surge bin. Operating mode 5 is chosen only when it is necessary to transfer coal from the dead storage pile.

Operating mode 5 supplies coal from the dead storage pile to the boiler surge bin. To operate in this mode automatically, conveyor 9A or 10A must first be started in AUTO, along with the corresponding magnetic separator. With the chosen conveyor running, flow gate 8C is aligned to supply coal to the running conveyor (9A or 10A). Conveyor 23A can then be started (in AUTO), and one of the three feeders (AF8D, AF8E, or AF8F) is started. The operating feeder is placed in AUTO to maintain the coal level in the boiler surge bin.

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Operating in mode 5 using manual controls requires the coal conveyors be started in the same sequence as described above using the MANUAL position. The operating feeder (AF8D, AF8E, or AF8F) must be set to match the plant burn rate to avoid overfilling or underfilling the boiler surge bin.

Operating the Unit 1 south filling system can be performed either manually or automatically. The four silos, 1D, 1C, 1B, and 1A, are filled in the order listed. When automatic operation is setup (all necessary switches in the AUTO position), the south filling system conveyors (11A, 12A, and 13A) will start in sequence (the sequence is the reverse of coal flow) when the silo levels decrease to the start fill level (approximately 275 tons remaining). Once conveyor 11A is started (last conveyor in the sequence), feeder 9A will start to supply coal from the boiler surge bin to conveyor 11A. Once the level in silo 1D reaches the stop fill level, the automatic air operated gate above silo 1D will close. Coal will then be discharged into silo 1C. Silo 1B will be filled after 1C reaches the stop fill level in the same manner just described. Finally, silo 1A will begin to fill. Once it reaches the stop fill level, feeder 9A will begin the system purge. The feeder will stop and conveyors 11A, 12A and 13A will continue to run for 5 minutes. This ensures that all of the coal is off of the conveyors before they are shutdown.

The Unit 1 north coal feeders are filled in a similar manner. The silos are filled beginning with silo 1H and ending with silo 1E. The coal conveyors are started in reverse order of coal flow, beginning with conveyor 16A and ending with conveyor 14A. Once all of the conveyors are in service, feeder AF10B starts to fill the silos. Once all of the silos are filled, the feeder stops and the conveyors operate for 5 additional minutes to clear themselves of coal. After the 5 minute purge period, the conveyors will stop. Manual operation is the same as that described for the Unit 1 south silos using but using the Unit 1 north silo equipment.

The Unit 2 south and north silo filling system operates in the same manner as described above. The Unit 2 south silo filling system uses conveyors 17A, 18A, and 19A and feeder AF12D to fill silos 2D, 2C, 2B and then 2A. The Unit 2 north filling system uses conveyors 20A, 21A and 22A and feeder AF11C to fill silos 2H, 2G, 2F, and then 2E.

The silo filling systems are equipped with an EMERGENCY STOP pushbutton to immediately halt any filling operation. This pushbutton should only be depressed in emergency situations since it will stop all of the associated feeders and conveyors without purging the coal from the system. This will result in higher starting loads on the conveyor motors and could lead to excessive conveyor belt stretching.

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2.1.4 Technical Design Data

Conveyor 1A	
Type	Continuous Linked V-Belt
Capacity	3600 tph
Belt Speed	565 fpm
Power Requirements	12C33, 4160 volt MCC, Bus 12B3

Conveyor 2A	
Type	Continuous Linked V-Belt
Capacity	2600 tph
Belt Speed	615 fpm
Power Requirements	4160 volt, Bus 12B3

Conveyor 3A	
Type	Continuous Linked V-Belt
Capacity	1600 tph
Belt Speed	615 fpm
Power Requirements	4160 volt, Bus 12B3

Conveyor 4A	
Type	Continuous Linked V-Belt
Capacity	1600 tph
Belt Speed	615 fpm
Power Requirements	4160 volt, Bus 12B4

Conveyor 5A	
Type	Continuous Linked V-Belt
Capacity	1600 tph
Belt Speed	407 fpm
Power Requirements	4160 volt, Bus 12B4

Conveyor 6A	
Type	Continuous Linked V-Belt
Capacity	1600 tph (Reclaim) 2100 tph (Stackout)
Belt Speed	450 fpm
Power Requirements	4160 volt, Bus 12B3 (stacking), Bus 12B4 (reclaiming)

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Conveyor 9A	
Type	Continuous Linked V-Belt
Capacity	1600 tph
Belt Speed	465 fpm
Power Requirements	4160 volt, Bus 12B1

Conveyor 10A	
Type	Continuous Linked V-Belt
Capacity	1600 tph
Belt Speed	465 fpm
Power Requirements	4160 volt, Bus 12B2

Conveyor 11A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	430 fpm
Power Requirements	480 volt, Bus 1C26

Conveyor 12A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	425 fpm
Power Requirements	480 volt, Bus 1C26

Conveyor 13A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	100 fpm
Power Requirements	480 volt, Bus 1C1

Conveyor 14A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	430 fpm
Power Requirements	480 volt, Bus 1C26

Conveyor 15A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	425 fpm
Power Requirements	480 volt, Bus 1C26

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Conveyor 16A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	100 fpm
Power Requirements	480 volt, Bus 1C2

Conveyor 17A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	430 fpm
Power Requirements	480 volt, 2C26

Conveyor 18A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	425 fpm
Power Requirements	480 volt, 2C26

Conveyor 19A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	100 fpm
Power Requirements	480 volt, Bus 2C1

Conveyor 20A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	430 fpm
Power Requirements	480 volt, Bus 2C26

Conveyor 21A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	425 fpm
Power Requirements	480 volt, Bus 2C26

Conveyor 22A	
Type	Continuous Linked V-Belt
Capacity	500 tph
Belt Speed	100 fpm
Power Requirements	480 volt, Bus 2C2

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Conveyor 23A	
Type	Continuous Linked V-Belt
Capacity	1600 tph
Belt Speed	450 fpm
Power Requirements	4160 volt, Bus 12B4

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2.2 Magnetic Separators

2.2.1 Function

The function of the magnetic separators is to remove tramp iron and other ferrous material from the coal to prevent damage to the coal handling equipment, pulverizers and burners.

2.2.2 Detailed Description

The Coal Board System is equipped with magnetic separators at the head pulley ends of the following conveyors:

- Conveyor 2A
- Conveyor 6A
- Conveyor 9A
- Conveyor 10A

The magnetic separators are positioned at a 10° angle above the conveyor head pulleys so that all coal passes beneath the separator as it begins to fall from the belt. The tramp iron is removed from the coal supplied from the live storage pile before entering the crusher surge bin by magnetic separator 2A. Magnetic separator 6A is positioned at the head pulley end of conveyor 6A to remove tramp iron from the coal reclaimed by the stacker reclaimer. Magnetic separators 9A and 10A are positioned at the head pulley ends of conveyors 9A and 10A respectively, and remove tramp iron from coal before it enters the boiler surge bin.

The magnetic separators consist of a rectangular electromagnet, a rubber conveyor belt, conveyor pulleys and drive motor. The entire magnetic separator housing is mounted above the respective conveyor with the magnetic separator portion running at a slight angle (10°) above the conveyor. The electromagnet attracts tramp iron contained in the coal to the conveyor belt positioned between the magnet and the coal discharged from the conveyor. The conveyor belt forms a continuous loop around the electromagnet. The force exerted by the electromagnet holds the tramp iron to the magnetic separator belt as the belt travels across the face of the magnet. The tramp iron falls off of the magnetic separator belt as the belt passes beyond the magnets periphery. The tramp iron is discarded through the tramp iron chute for later cleanup and removal.

The electromagnet is supplied with DC current which strengthens the magnetic field. A transformer/rectifier reduces and converts the AC supply voltage to DC power, and also controls the power to the electromagnet. The magnet is oil filled and is equipped with fill and drain plugs. The conveyor pulleys and electric drive motor are equipped with grease lubricated bearings.

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2.2.3 Operation, Control, and Safety

The magnetic separators are controlled from the coal board. Each magnetic separator (2A, 6A, 9A and 10A) is equipped with a BYPASS-ON selector switch. In the BYPASS position, the magnetic separator will not start in the proper sequence based on the selected operating mode. In bypass this will allow the associated conveyor to be started without the magnetic separator in service. In the ON position, the magnetic separator will START. Indicating lights are provided to indicate the operating status of each magnetic separator, RUNNING and STOPPED.

The magnetic separators should always be placed in service before placing the corresponding conveyor in service. They should remain in service as long as the corresponding conveyor is operating, and should only be shutdown following the coal handling system equipment shutdown.

2.2.4 Technical Design Data

Magnetic Separators 2A, 6A, 9A, and 10A	
Type	Belt/Magnet
Power Requirements	480 VAC

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2.3 Telescopic Chute

2.3.1 Function

The function of the 5A telescopic chute is to direct coal discharged from Conveyor 5A onto dead storage pile over #2 Dead Storage Vault.

2.3.2 Detailed Description

The telescopic chute receives coal from conveyor 5A and discharges coal onto the dead storage pile. The chute consists of telescoping sections which extend and retract to lengthen or shorten the chute. By maintaining the chute discharge as close as possible over the coal pile, windblown fugitive dust emissions are minimized during stacking operation.

Tilt switches are located at the low end of the chute. These switches hang below the bottom of the chute to sense the coal pile level. When the switches sense the coal pile, they automatically actuate the drive that raises the chute. The chute is raised a predetermined amount by an automatic indexing system.

The telescopic chute is driven by a winch type arrangement consisting of two cables which run the length of the chute on opposite sides. The double drum winch is driven by a electric power unit.

2.3.3 Operation, Control, and Safety

The telescopic chutes are operated from the coal board using RAISE and LOWER pushbuttons. Each pushbutton is also equipped with a dedicated indicating light. The lights illuminate whenever the telescopic chute is in motion.

Typically, the telescopic chute is set in position before beginning coal transfer operations. Once it is lowered into position, it will automatically raise as the coal pile beneath it grows. The telescopic chute will continue to raise until it reaches it top most position. When this occurs, feeder AF4B will stop and coal will no longer be supplied to conveyor 5A. If the coal level reaches the telescopic chute while it is in the top most position, conveyor 5A will immediately stop.

2.3.4 Technical Design Data

None

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2.4 Surge Bins

2.4.1 Function

The function of the surge bins is to maintain a continuous supply of coal. The description below applies to the following surge bins:

- Crusher Surge Bin
- Transfer Surge Bin
- Boiler Surge Bin

2.4.2 Detailed Description

The 300 ton Crusher Surge Bin is located in the crusher tower building, east of the rotary car dumper and west of the live storage area. The surge bin receives coal from conveyor 2A and the live storage pile. The surge bin is made of welded sheet steel. The base of the surge bin tapers down into two hoppers. Each hopper supplies coal to the vibrating feeder and crusher located beneath the hopper. A shut off gate is provided at the outlet of each crusher surge bin hopper to isolate the respective vibrating feeder and coal crusher.

In addition to the surge bin, the following equipment is located in the crusher tower:

- Conveyor 2A head pulley
- Magnetic separator 2A
- Vibrating feeders 3A and 3B
- Crushers (not in use)
- Crusher flow gates
- Conveyor 3A tail pulley
- Conveyor 4A tail pulley
- Roof vent fans
- MCC room with the following:
    - Control panel for sump pumps 3 and 4
    - Power supply for magnetic separators 2A and 6A
    - Control panels for the vibrating feeders (2A, 2B, 2C, 2D, 3A, and 3B)
    - Control panel for feeders 4A, 4B, and 5A
- Conveyor 2A takeup
- Fire Systems 5A, 5B, and 5C
- Crusher bypass and gates
- Cranes (3)
- Pressure fans.

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The 350 ton Transfer Surge Bin is located in transfer tower 1A and is located east of the stack and west of the stacker reclaimer. The surge bin receives coal from the crusher outlet using conveyors 3A and 4A. The transfer surge bin is made of welded sheet steel and tapers down at the bottom into three hoppers. Each hopper supplies coal through a separate feeder to either the boiler surge bin via conveyors 9A/10A, to the stacker reclaimer via conveyor 6A, or to the dead storage pile via conveyor 5A and the telescopic chute.

In addition to the surge bin, the following equipment is located in transfer tower 1A:

- Conveyor 3A head pulley
- Conveyor 4A head pulley
- Conveyor 5A tail pulley
- Feeder AF5A
- Cranes (2)
- Conveyor 6A loading end for stacking out coal via the stacker reclaimer
- Conveyor 6A reclaim drive motor
- Magnetic separator 6A
- Roof vent fan TT1A
- Portions of conveyors 9A and 10A
- Feeder AF4A
- Feeder AF4B (reversible)
- Flow gate 7A at the discharge of conveyor 6A reclaim
- Fire systems 4A, 4B, 4C,. 4D, and 4E

The 300 ton Boiler Surge Bin is located in transfer tower 2A east of the stack and in between the Unit 1 and 2 boilers. The boiler surge bin receives coal from conveyors 9A and 10A. The surge bin is made of welded sheet steel, which is tapered at the base into four hoppers. Each of the four hoppers supplies coal to one of the silo feeder conveyors (11A, 14A, 17A, and 20A). Shutoff gates are provided at each hoppers outlet for isolation purposes.

- Conveyor 9A head pulley
- Conveyor 10A head pulley
- Cranes (3)
- Belt feeders 9A, 10B, 11C, and 12D
- Conveyor 11A tail pulley
- Conveyor 14A tail pulley
- Conveyor 17A tail pulley
- Conveyor 20A tail pulley
- Roof vent fan TT2A
- Magnetic separators 9A and 10A
- MCC room for Unit 1

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- MCC room for Unit 2
- TT2A control room relay panel and power supplies for the magnetic separators
- Fire systems 1, 2, 3A and 3B

The surge bins are equipped with level detection systems that can be used to control the corresponding conveyor operation. The level detection system will automatically increase or decrease the feeder speed rate to maintain sufficient level in the surge bin.

2.4.3 Operation, Control, and Safety

The surge bins are operated from the coal board. Each surge bin is equipped with a level recorder, a feed rate controller, and high and low level indicating lights. The surge bins are also equipped with level controllers. Each level controller can be operated in either AUTO or MANUAL (A/M). In MANUAL, the surge bin level must be maintained using the operating feeders' coal flow rate controller. In AUTO, the surge bin level will be maintained at setpoint by automatic operation of the operating feeder. For example, when the surge bin level decreases below setpoint, the controller will signal the feeder rate controller to increase the feed rate. Similarly, when the surge bin level increases above the setpoint, the feeder speed will decrease a corresponding amount.

The surge bin level controllers can also shutdown coal handling feeders if the surge bin level reaches the high level alarm setpoint. If the surge bin level increases to the high-high level alarm setpoint, both the operating feeder and coal conveyor supplying the surge bin will stop immediately to prevent overflowing the surge bin.

2.4.4 Technical Design Data

None

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2.5 Coal Feeders

2.5.1 Function

The function of the coal feeders is to supply coal from the overhead surge bin to the conveyors at a controlled rate.

2.5.2 Detailed Description

Vibrating feeders 3A and 3B, illustrated in Figure 2.5, are located under the crusher surge bin. Vibrating feeders 2A, 2B, 2C and 2D are located under the live storage pile at the tail end of conveyor 2A. Chutes, or hoppers, from the surge bin connect to the inlet of each feeder. Coal flows from the surge bin or live storage pile and connects to the feeder inlet. The feeders can be isolated by the shutoff gates at the base of the surge bin hopper.

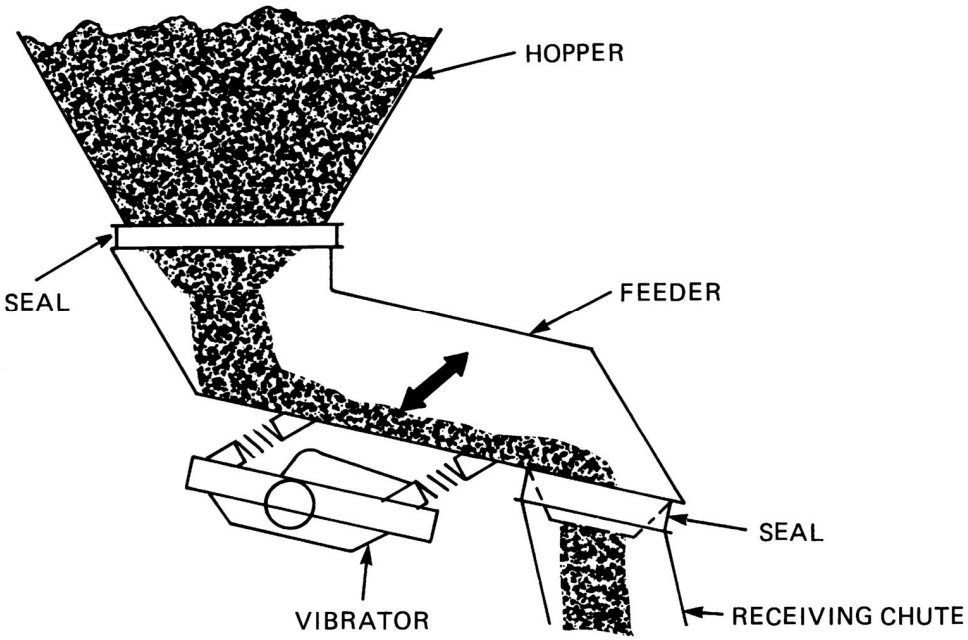

Figure 2.5 Vibrating Feeder

The 3A and 3B vibrating feeders can supply up to 1600 tons per hour (each) of coal to the crushers. The minimum feed rate is 300 tons per hour (tph) per feeder. Vibrating feeders 2A, 2B, 2C, and 2D can supply coal at a minimum rate of 150 tph to a maximum of 800 tph per feeder.

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Feeders 4A and 4B, 5A, 8D, 8E, 8F, 9A, 10B, 11C, and 12D are belt type feeders. Their feed rate is varied by changing the belt speed. Feeders 4A and 4B operate from 37 to 150 feet per minute (fpm), and the remaining feeders operate from 38 to 150 fpm. Each of the belt feeder capacities are listed in the table below.

Number	Minimum	Maximum
Feeder 4A	150 tph	1600 tph
Feeder 4B	150 tph	1600 tph
Feeder 5A	525 tph	2100 tph
Feeder 6A	150 tph	1600 tph
Feeders 8D, 8E, 8F	300 tph	1600 tph
Feeder 9A	80 tph	500 tph
Feeder 10B	80 tph	500 tph
Feeder 11C	80 tph	500 tph
Feeder 12D	80 tph	500 tph

2.5.3 Operation, Control, and Safety

Both the vibrating and belt type feeders are controlled from the coal board. All of the feeders are equipped with START and STOP pushbuttons. Additionally, they all are equipped with READY, RESET, and MOTOR RUN indicating lights. Each belt feeder is equipped with a speed indicating meter (with adjustable setpoint), a MANUAL indicating light and a manual feed rate meter. The speed indicator meter is equipped with a variable potentiometer to adjust the belt speed. The scale indicates from 0 to 100% with 0% being at a stand still and 100% being the maximum belt speed.

The vibrating feeders are equipped with manual feed rate signal meters, potentiometers and ON-OFF selector switches. The manual feed rate signal meter indicates the operating feed rate on a scale of 0 to 100%. The potentiometers are used to increase or decrease the feed rate, and the ON-OFF switch performs its labeled function.

The vibrating feeders and feeders 8D, 8E, and 8F are also equipped with OFF-MANUAL-AUTO selector switches. These switches are used in conjunction with the selected operating mode (1 through 5) described in Section 2.1.4. Along with the switches, these feeders are equipped with GATE OPEN and RUNNING indicating lights. Feeders 4A and 5A are equipped with similar selector switches but do not have the indicating lights.

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2.5.4 Technical Design Data

Feeders 2A, 2B, 2C, and 2D	
Type	Vibrating
Capacity	Min: 150 tph Max: 800 tph
Power Requirements	480 VAC

Feeders 3A and 3B	
Type	Vibrating
Capacity	Min: 300 tph Max: 1600 tph
Power Requirements	480 VAC

Feeders 4A and 4B	
Type	Belt
Capacity	Min: 300 tph Max: 1600 tph
Belt Speed	Min: 37 fpm Max: 150 fpm
Power Requirements	480 VAC

Feeder 5A	
Type	Belt
Capacity	Min: 525 tph Max: 2100 tph
Belt Speed	Min: 38 fpm Max: 150 fpm
Power Requirements	480 VAC

Feeders 8D, 8E, and 8F	
Type	Belt
Capacity	Min: 300 tph Max: 1600 tph
Belt Speed	Min: 38 fpm Max: 150 fpm
Power Requirements	480 VAC

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Feeders 9A, 10B, 11C, and 12D	
Type	Belt
Capacity	Min: 80 tph Max: 500 tph
Belt Speed	Min: 38 fpm Max: 150 fpm
Power Requirements	480 VAC

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2.6 Crushers

2.6.1 Function

The function of the coal crushers is to reduce the overall size of each piece of coal for easier handling, and better bunker and feeder operation.

2.6.2 Detailed Description

The two coal crushers are located in the crusher building below the vibrating feeders and the surge bin. Each crusher receives coal from the vibrating feeder located directly above the inlet end of the crusher. Coal falls into the crusher between a large roller and a cage breaker plate. As the roller rotates, coal is ground between the screen plate and the roller. Coal, broken into pieces, falls through the screen and is discharged to the conveyor below (#3 or #4). The crusher screen is made of a carbon-manganese-steel alloy to minimize wear on the screen.

2.6.3 Operation, Control, and Safety

The crushers, although still installed are not used. The information presented in this section is to familiarize the operator with the crushers in case they are ever put back into service.

2.6.4 Technical Design Data

None

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2.7 Coal Storage

2.7.1 Function

The function of the live and dead coal storage piles is to provide bulk storage of raw coal (live storage pile) and crushed coal (dead storage pile).

2.7.2 Detailed Description

The live storage pile is located east of the rail receiving hopper and the crusher tower. The live storage pile receives coal from the rail receiver hopper as it is dumped off conveyor 2A through the telescopic chute.

The live storage pile is positioned above four feeders which are housed in the live storage pile vault. Feeders 2A, 2B, 2C, and 2D transfer coal from the live storage pile hoppers (located below grade) to conveyor 2A. In addition to the equipment described above, the live storage pile area also contains the following equipment:

- Conveyor 1A head pulley and drive
- Conveyor 2A belt scale
- Sump pumps 3 and 4
- Toyo sump pump
- Conveyor 2A tail pulley
- Submersible pump
- Fire system 6

The dead storage pile is located east of transfer tower 1A. The dead storage pile receives coal from the transfer surge bin outlet. The coal is conveyed on conveyor 5A which discharges through the telescopic chute to the pile. Dead storage vault 1A is located beneath the dead storage pile. The vault contains the following equipment:

- Conveyors 9A and 10A tail pulleys
- Conveyor 23A head pulley and drive
- Flow gate 8C which can feed conveyor 9A or 10A
- Sump Pumps 5 and 6
- Toyo sump pump
- Submersible pump
- Dead storage pile vault 1A vent fan (at tunnel entrance)
- Fire system 17
- Water supply piping for fire system 18

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2.7.3 Operation, Control, and Safety

There are no controls associated with the coal storage piles.

2.7.4 Technical Design Data

None

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3.0 REFERENCES

3.1 P&ID's

a. Drawing 1116-000007, Proposed Coal Handling Flow Sheet.

3.2 Control Logics and Loops

None

3.3 Electrical Single Line Diagrams

None

3.4 Electrical Schematics

None

3.5 Instruction Manuals

a. McNally Wellman, Parts Manual Instructions
b. Operating Instruction Coal Handling System
c. Sargent & Lundy, Coal Handling System Dust Collection

3.6 Miscellaneous

a. Esterline Angus, Easi/GRAPH 220
b. OP-1206.27, Coal Yard Fire Protection, Independence Operating Procedure
c. OP-1206.33A, Coal Yard Alarms, Independence Operating Procedure

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4.0 SIGN OFF AND RECORD OF REVISIONS

Craig Brown _____ 9/9/02
REVIEWED BY: OPERATOR DATE

John G. Tinin _____ 9/9/02
APPROVED BY: OPERATIONS SUPERVISOR DATE

RECORD OF REVISIONS

Revision	Explanation	Date
Rev. 0	Initial Issue	08/02/95
Rev. 2	Completed revision. On a high level removed all reference to dust collectors in both SD & OP. Removed OP 5.0 System Abnormal Conditions. Changed OP 2.11-2.14Changed title form Coal Yard to Fuel Handling	09/09/02

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Independence Plant Unit #2 Water Box Inspection Notes
10/4-10/5, 2000

The debris in the 2B inlet water box had been removed prior to my inspection. It was reported by James Graham of ISES that, before cleaning, 75-80% of the tube inlets were obstructed with ACB fill, plastic fill spacers, pieces of the cooling tower drift eliminators, sheets of scale from the pipe and water box wall, etc. The majority of the inlet tubes in 2B were full of mud as a result of the blockages causing reduced flow. The other inlet water boxes appeared to have 10-20% of the tube inlets blocked with some type of debris and mud.

The copper alloy tubes and tube sheets had the appearance of new metal (the "new penny" look). This is usually caused by removal of the passive oxide layer on this metal by some corrosive mechanism like depressed or elevated pH or addition of an oxidizer such as Towerbrom 960 to the recirculating cooling water. Treatment with 4 to 5 ppm Cuprostat will re-passivate the metal surface after this oxide has been removed and is fairly presistant to current bromination practices at ISES. The Cuprostat should be fed at least twice monthly to preserve this protective barrier, preferable weekly for the best protection. I will evaluate the other chemicals used at the towers and verify that current application rates are not corrosive to copper alloys.

There was some questions raised about the difference in appearance in the center section of tubes in the inlet water boxes from the remainder of the tube bundle. This difference is explained by the fact that the air removal section contains 304 stainless steel tubes, not 90/10 copper/nickel.

There was no scale noted in the inlets or turn around water boxes. The ID of the tubes in the outlet water boxes were coated with a fairly thick accumulation of a hard scale like material as far as visible into the tubes. A sample was collected from tubes in 2B for analysis. I suspect the material is calcium carbonate scale formed due to elevated RCW temperature, pH, and dissolved solids experienced during the past several months. This buildup can cause impact condenser performance and is most effectively removed by acid cleaning. Steel scrapers are available to mechanically remove the scale but I am not sure how effective they are. The copper alloy is softer than the steel and subject to metal removal if the scrapers are used. Some of this accumulation may be removed over time by thermal cycling of the unit. This was seen at White Bluff prior to their condenser acid clean.

There was a small accumulation of dead algae and other material on the upper portion of the turn around water box tube sheets. There did not appear to be as much as seen in the previous inspections and it did not seem to be causing any problems.

Several photographs were taken and will follow as soon as they are developed and labeled.

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Recommendations:

1) Because it immediately impacts condenser performance, the mud and other debris should be removed form the condenser tubes and water boxes. Time constraints may not allow complete cleaning so I suggest starting in the bottom of 2B-2 inlet box and working up the tubes in that and 2B-1 water boxes, cleaning as many tubes as possible. Shooting plastic darts or nylon brushes with high pressure air/water is preferred followed by the air/water alone. If that is not available flushing the tubes with fire hoses may get a good portion of the mud out.
2) Add 30-40 gallons of Cuprostat to the cooling tower immediately after start up to passivate the copper in the system and evaluate the cause for its "new penny" appearance.
3) Plan to pull a condenser tube from the top of 2B-2 condenser outlet water box at the next opportunity to quantify the amount and type of scale build-up in the tubes.

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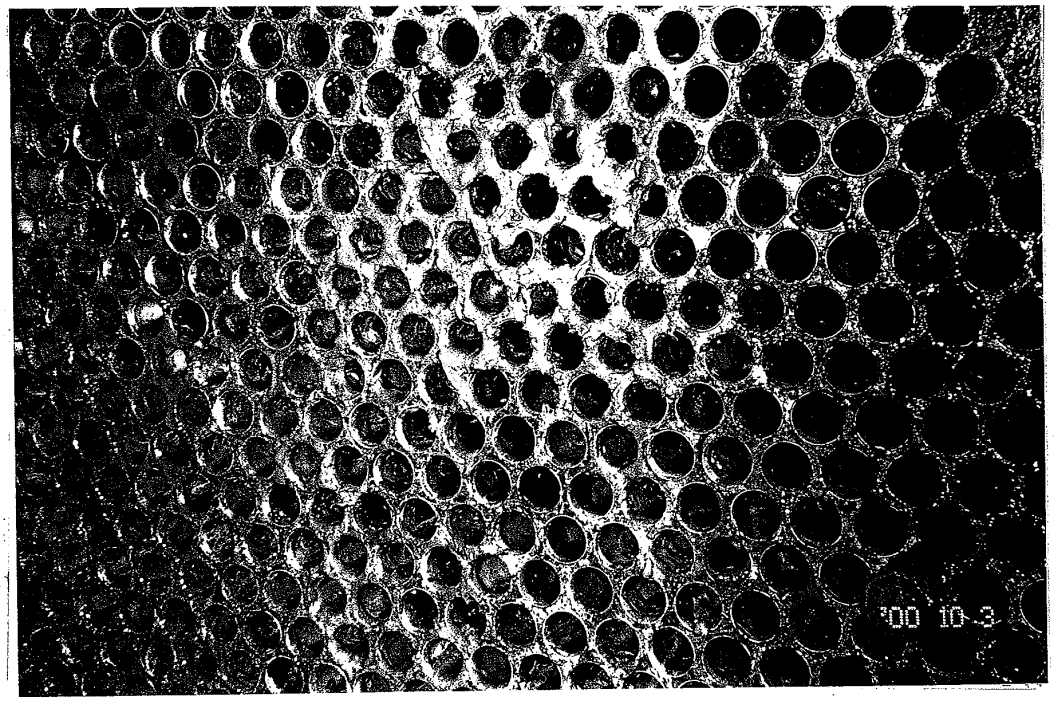
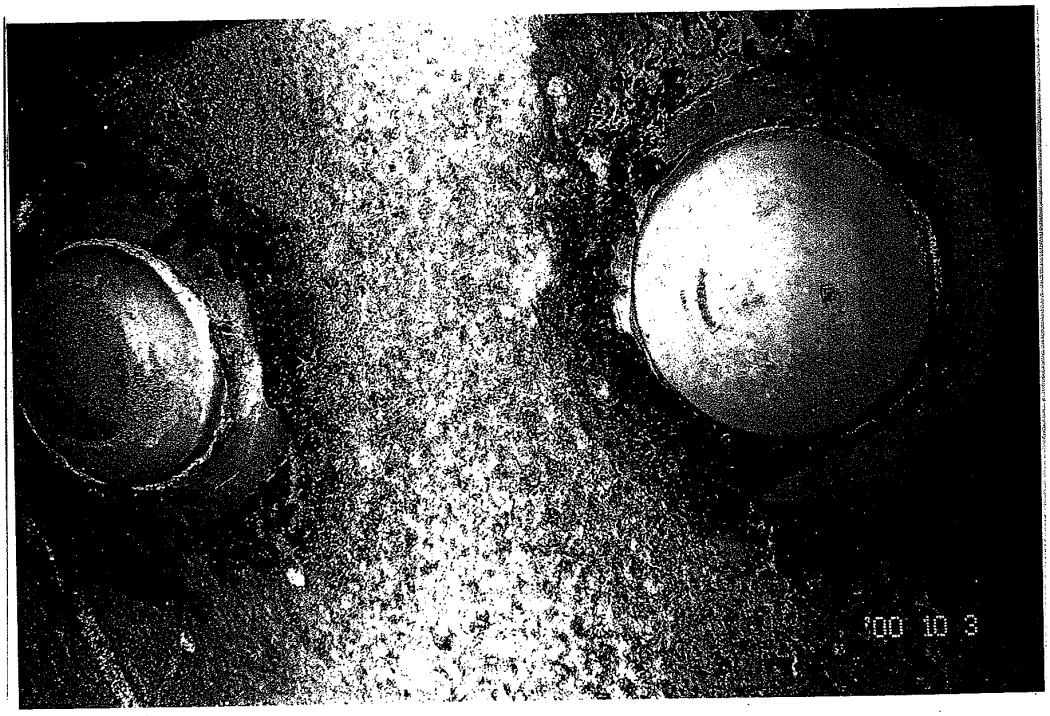
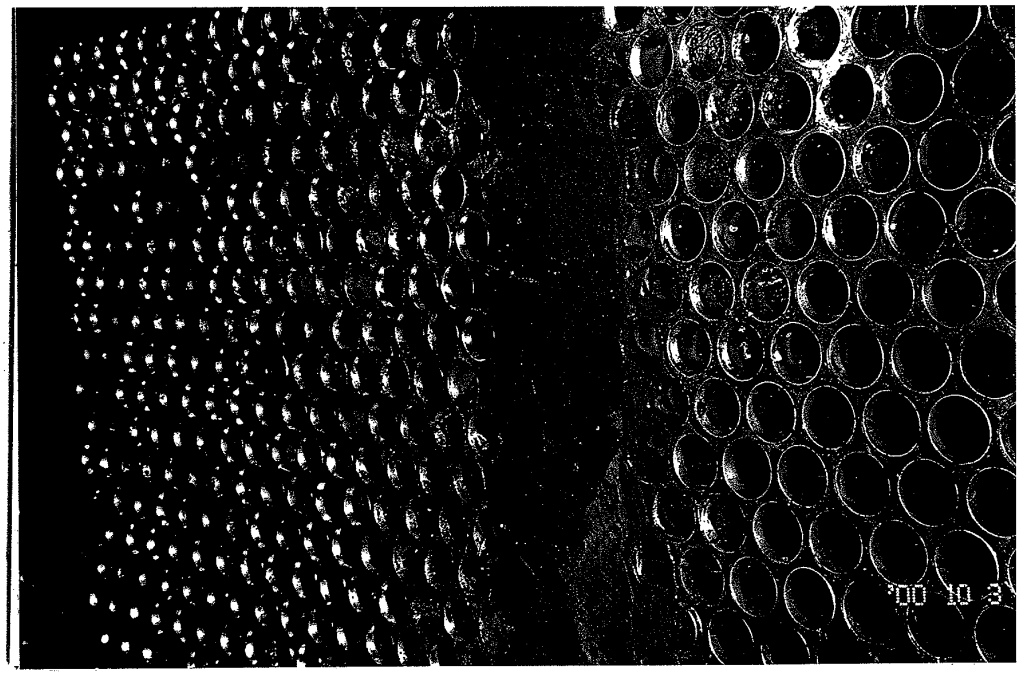


ISES **2B-2** Inlet Water Box

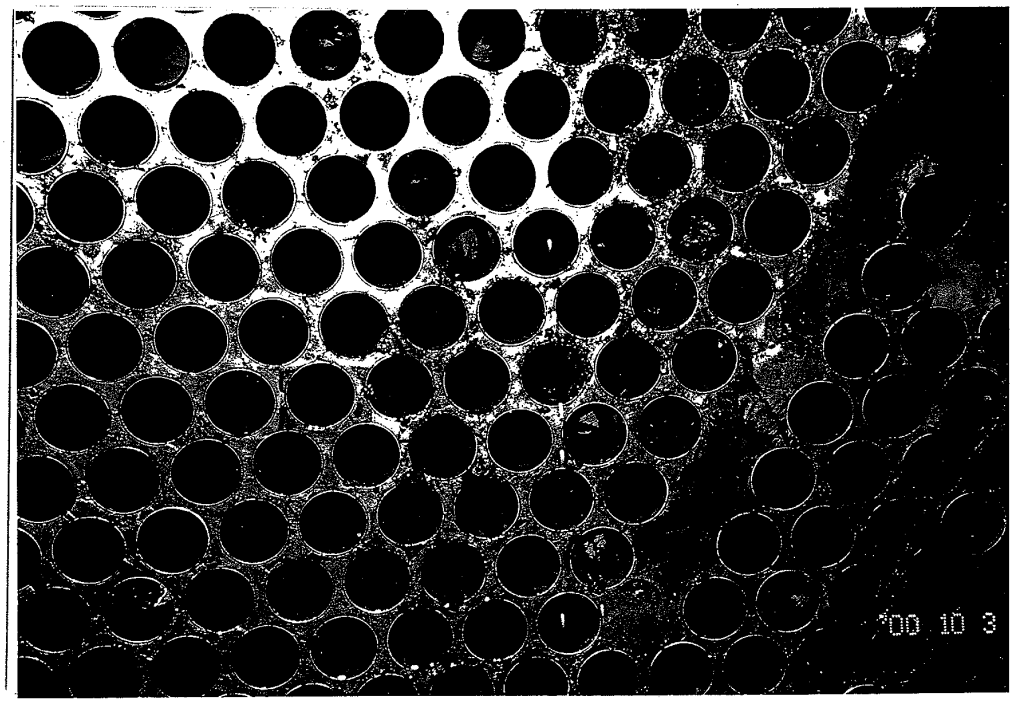


ISES **2B-2** Inlet Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

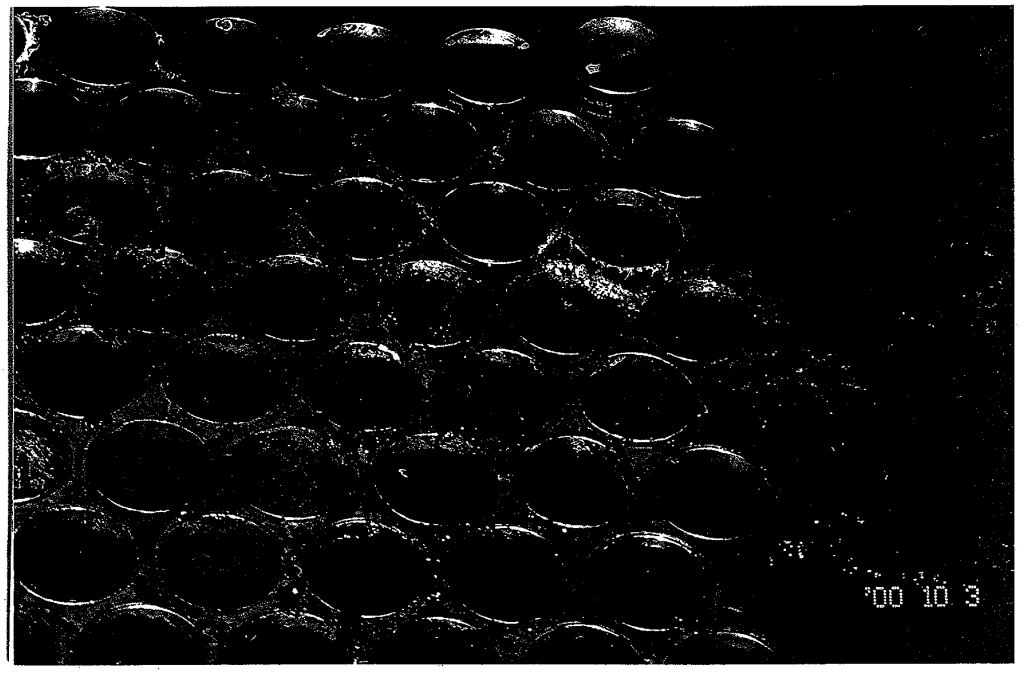


ISES **2B-2** Inlet Water Box

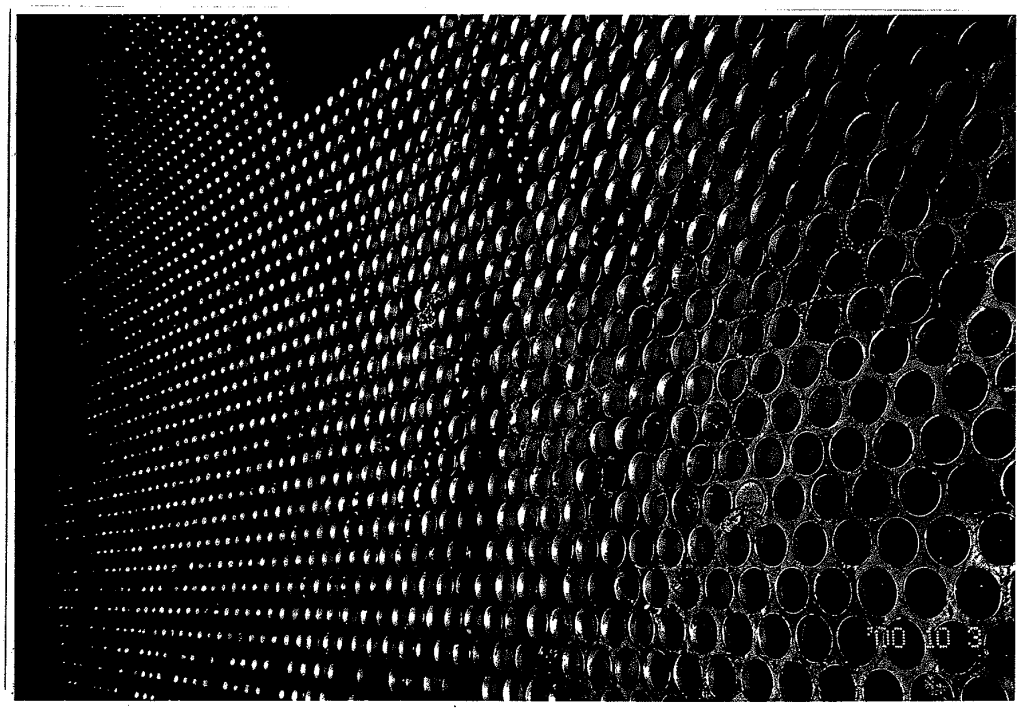


ISES **2B-2** Inlet Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

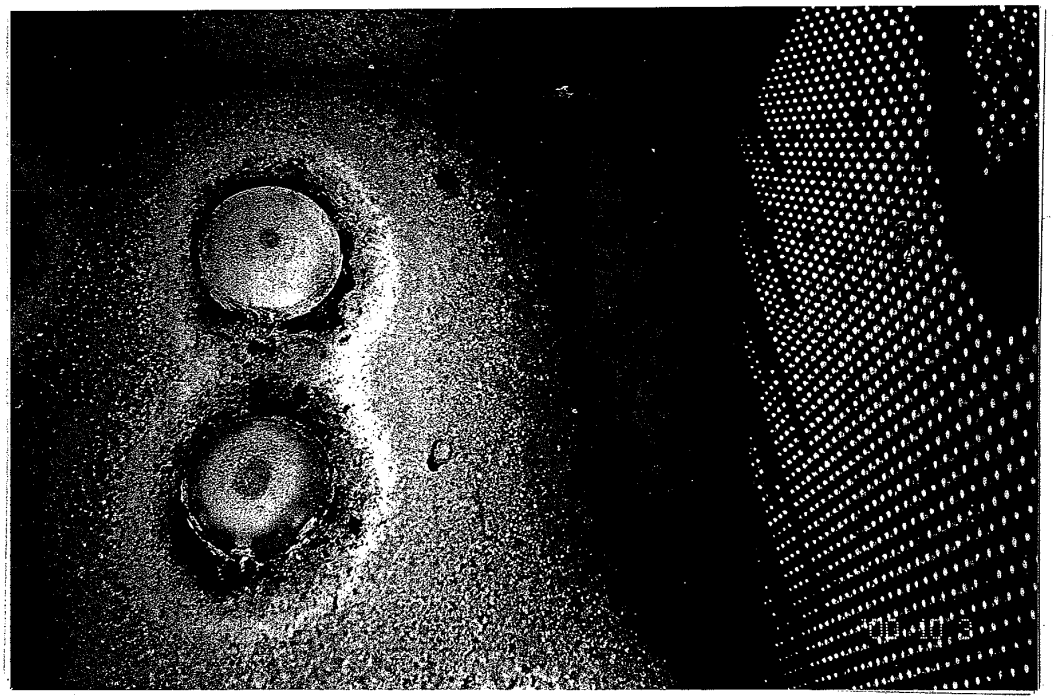


ISES **2B-1** Inlet Water Box

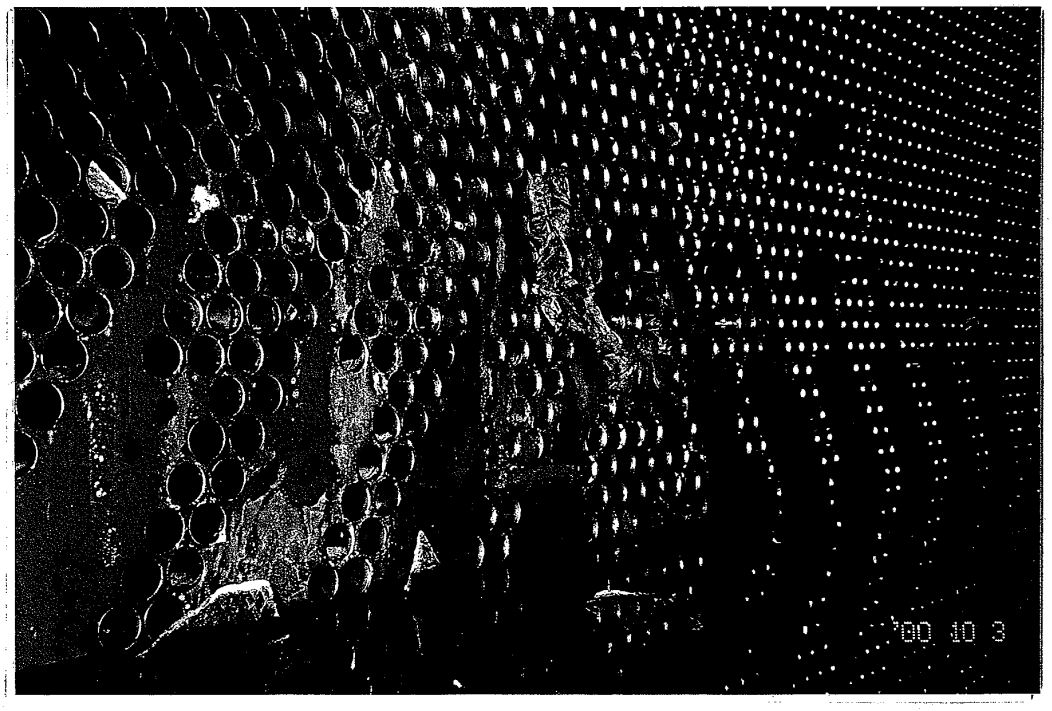


ISES **2B-1** Inlet Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

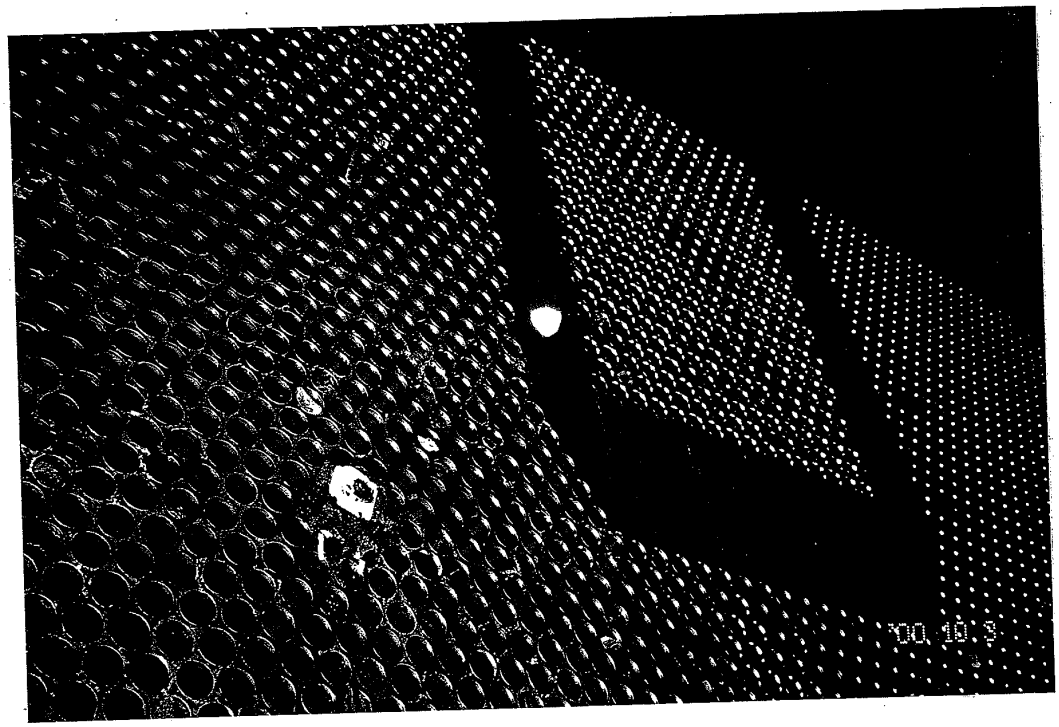


ISES **2A-2** Inlet Water Box

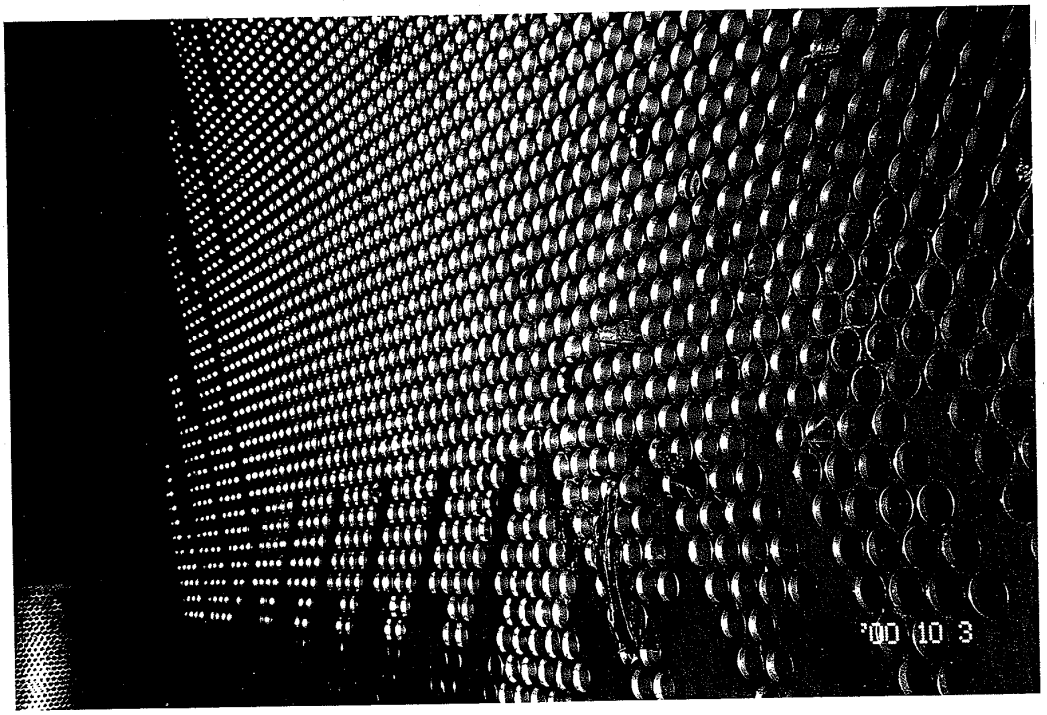


ISES **2A-2** Inlet Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD



ISES **2A-1** Inlet Water Box



ISES **2A-1** Inlet Water Box

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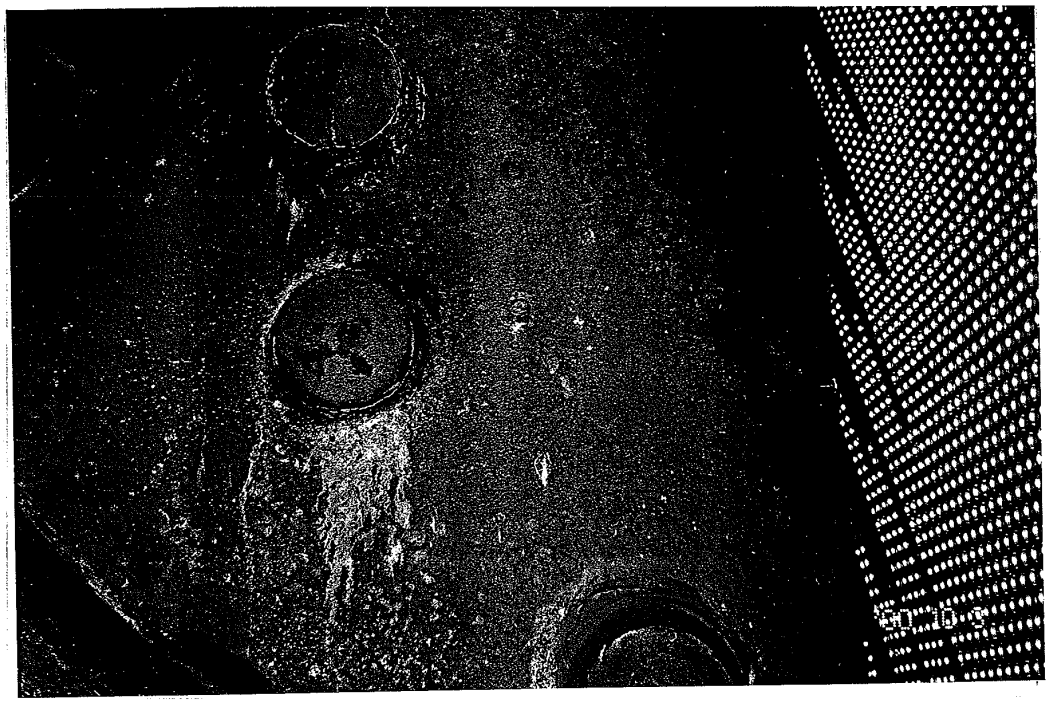
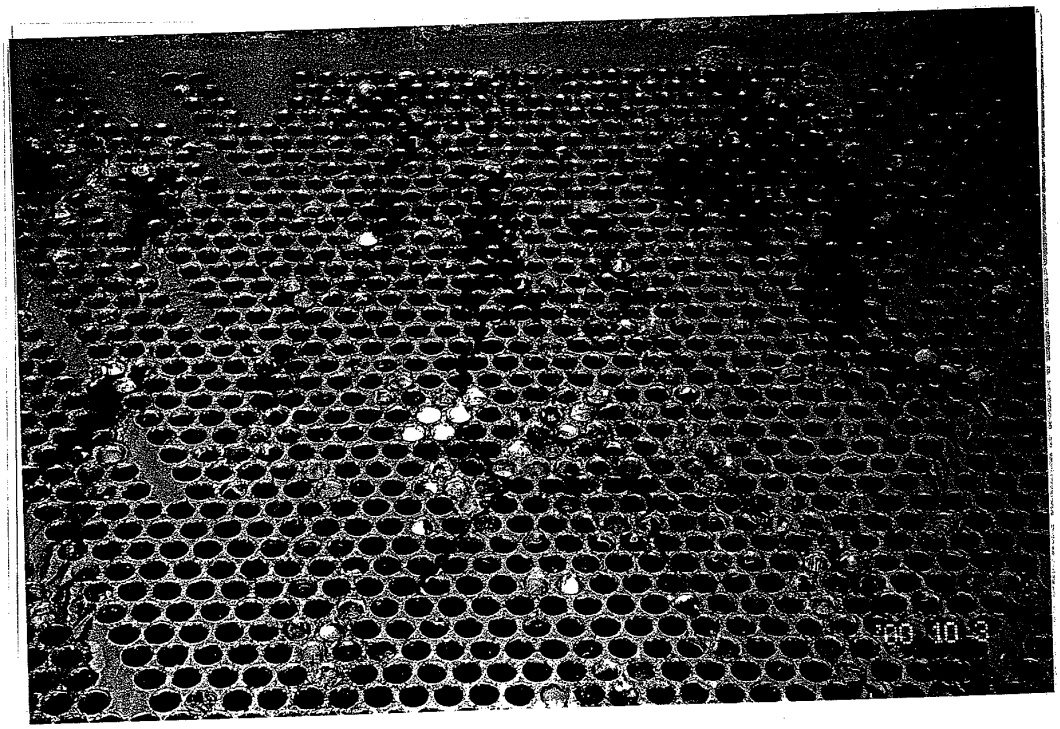
Claim Withdrawn. Contains No CBI. 07/11/2016_YD

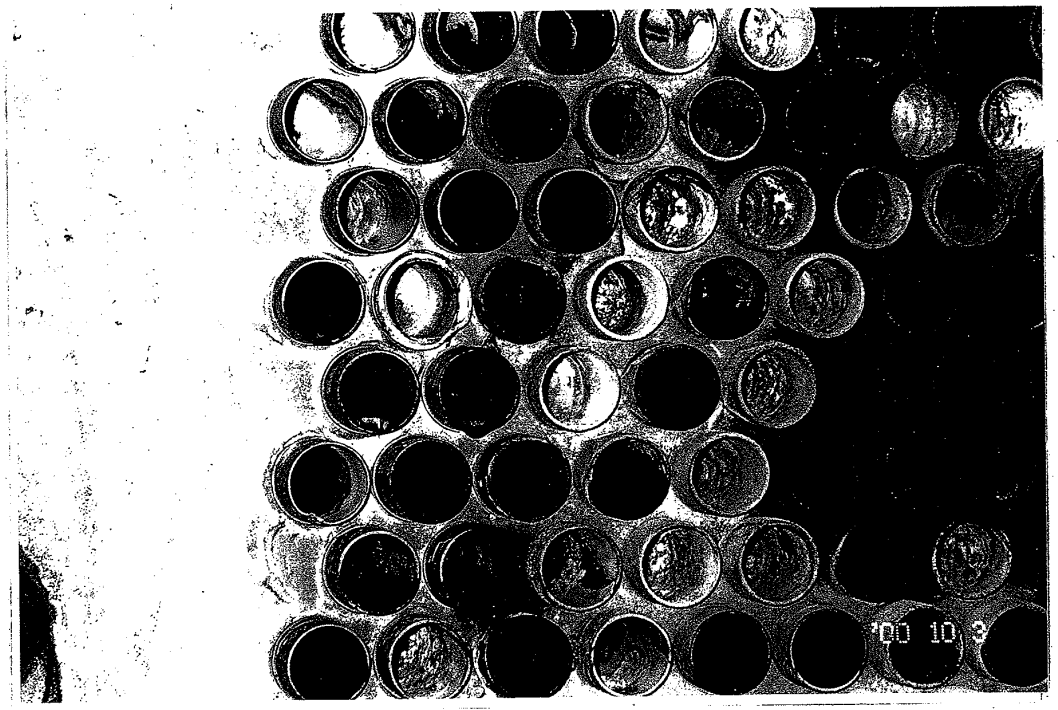


ISES **2B-2** Turn Around Water Box

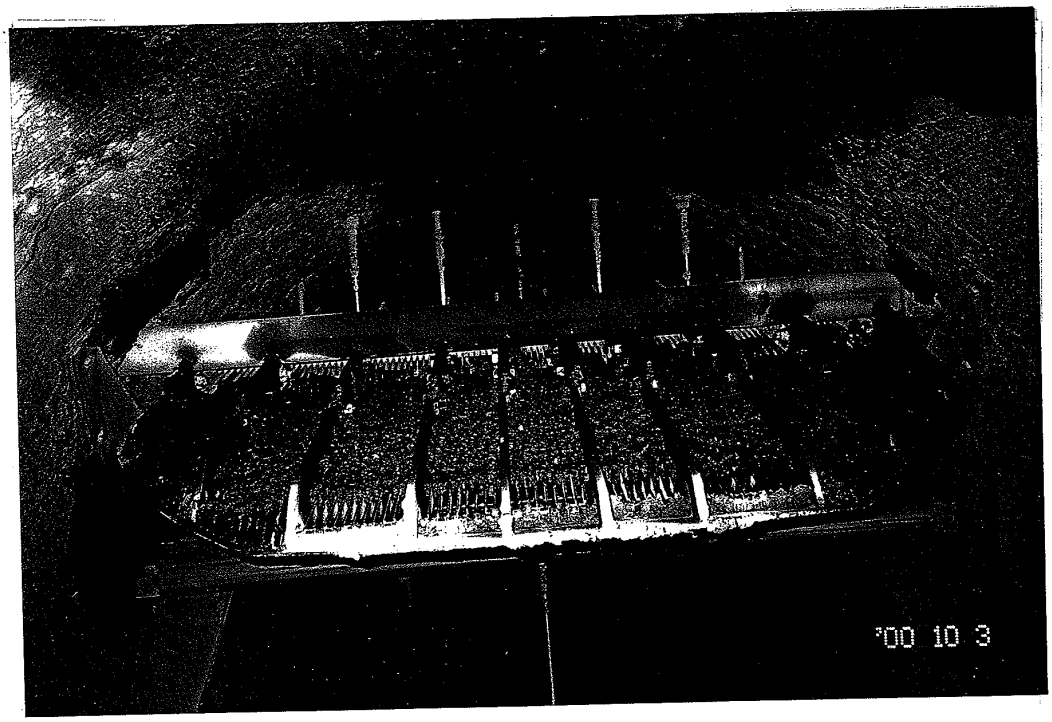


ISES **2B-2** Turn Around Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD



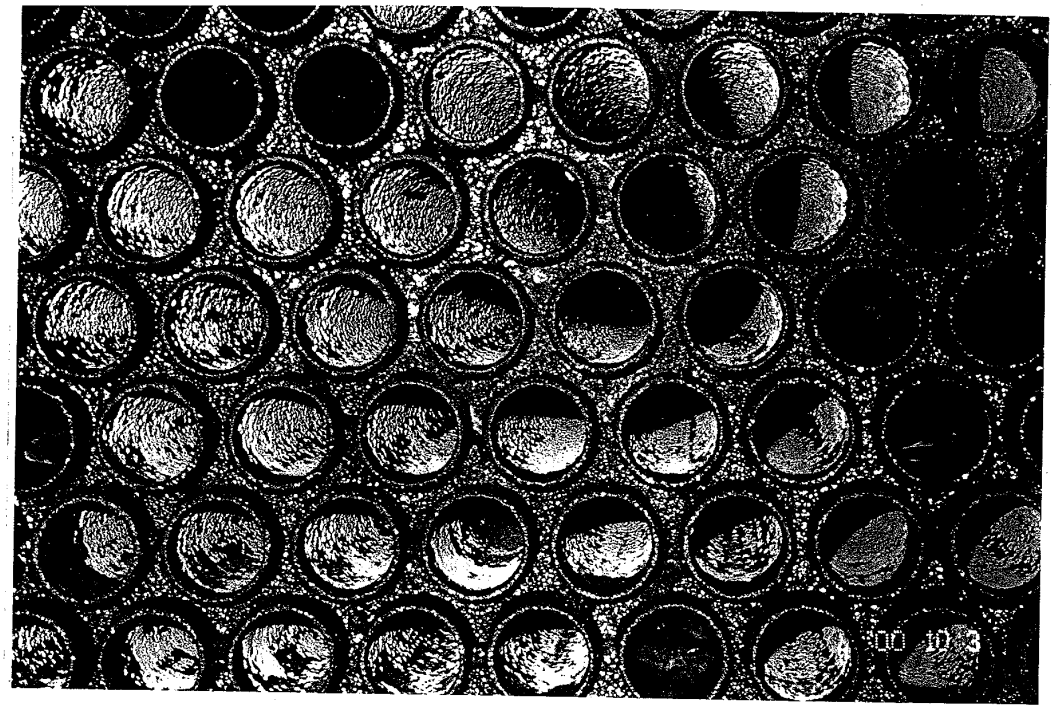
ISES **2B-2** Outlet Water Box



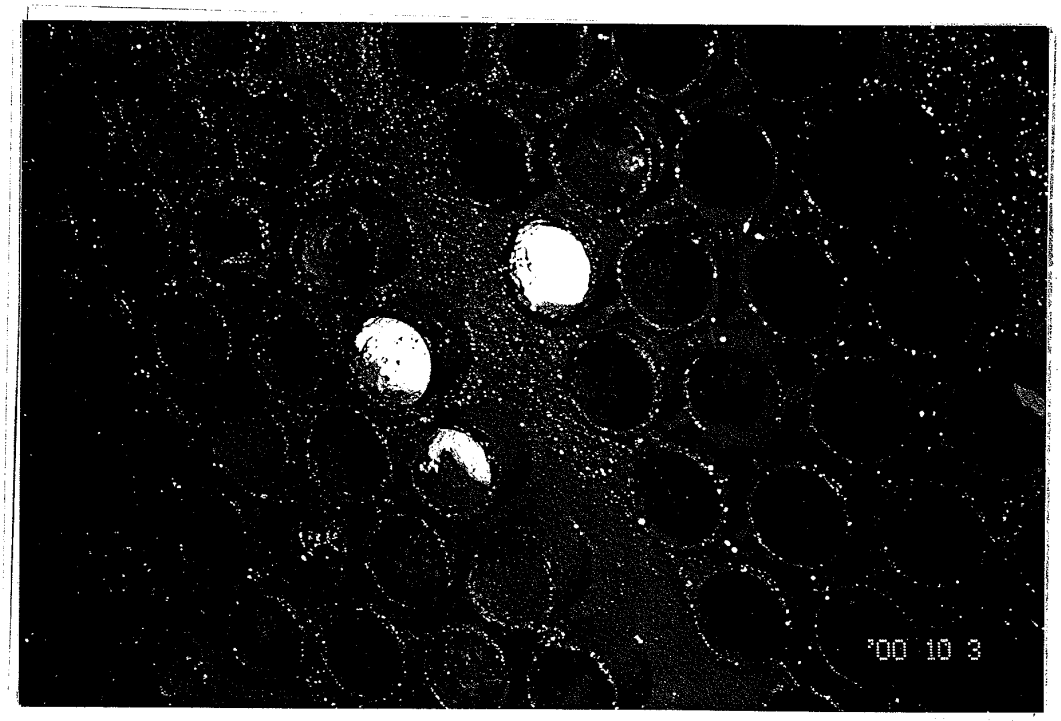
ISES **2B-2** Outlet Water Box

Confidential Business Information

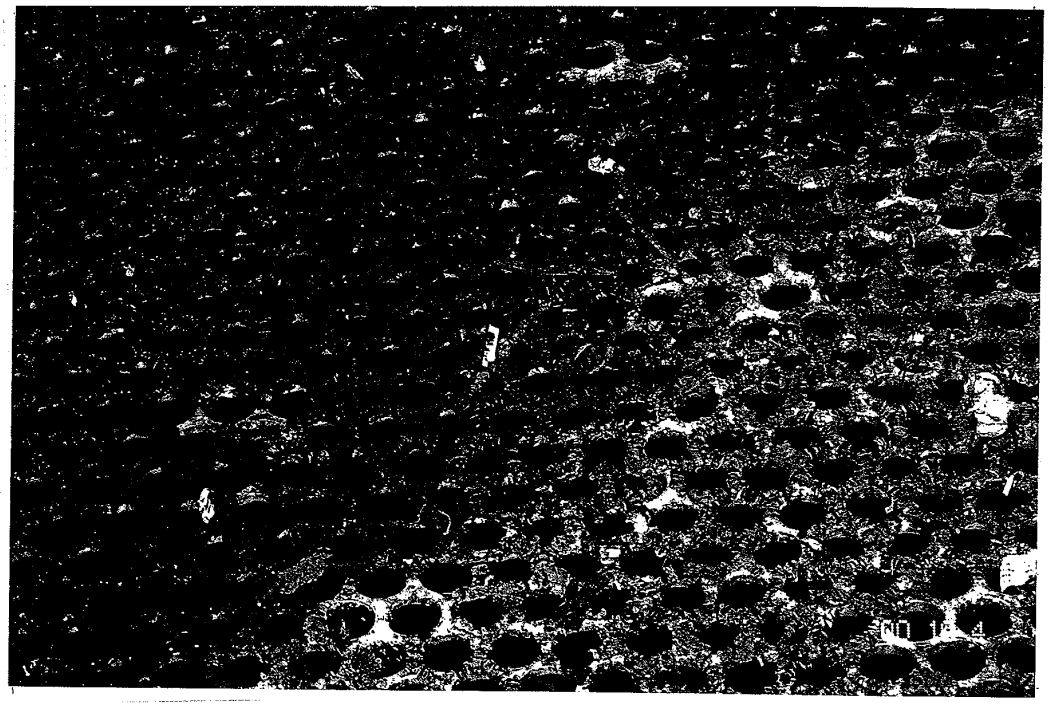
Claim Withdrawn. Contains No CBI. 07/11/2016_YD



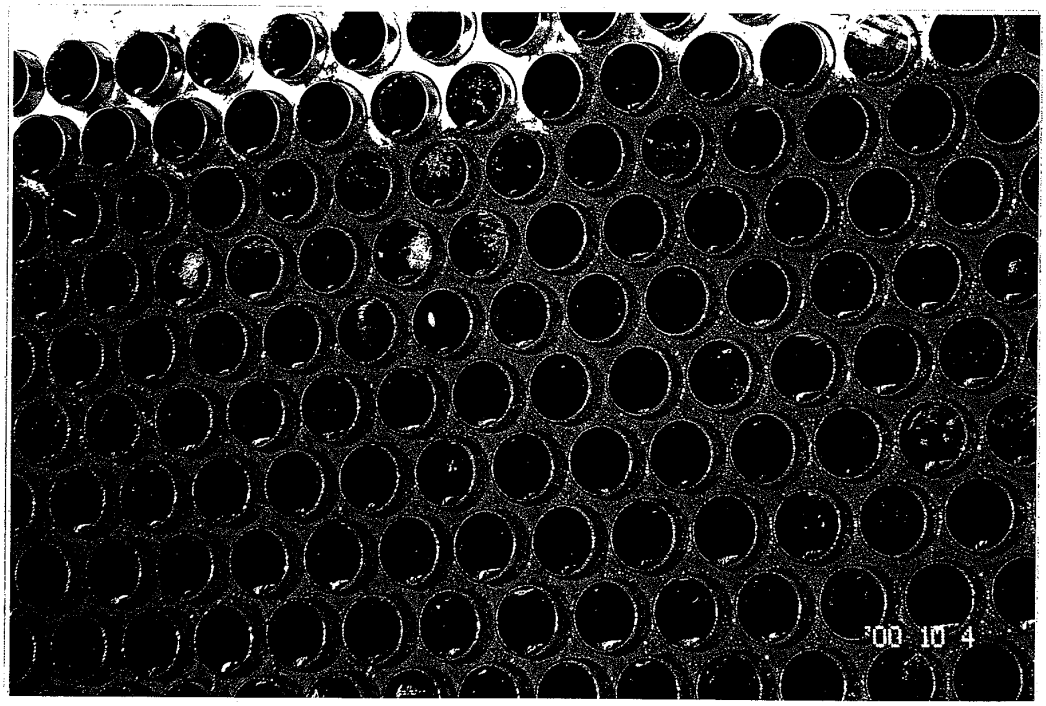
ISES **2B-2** Outlet Water Box



ISES **2B-2** Outlet Water Box

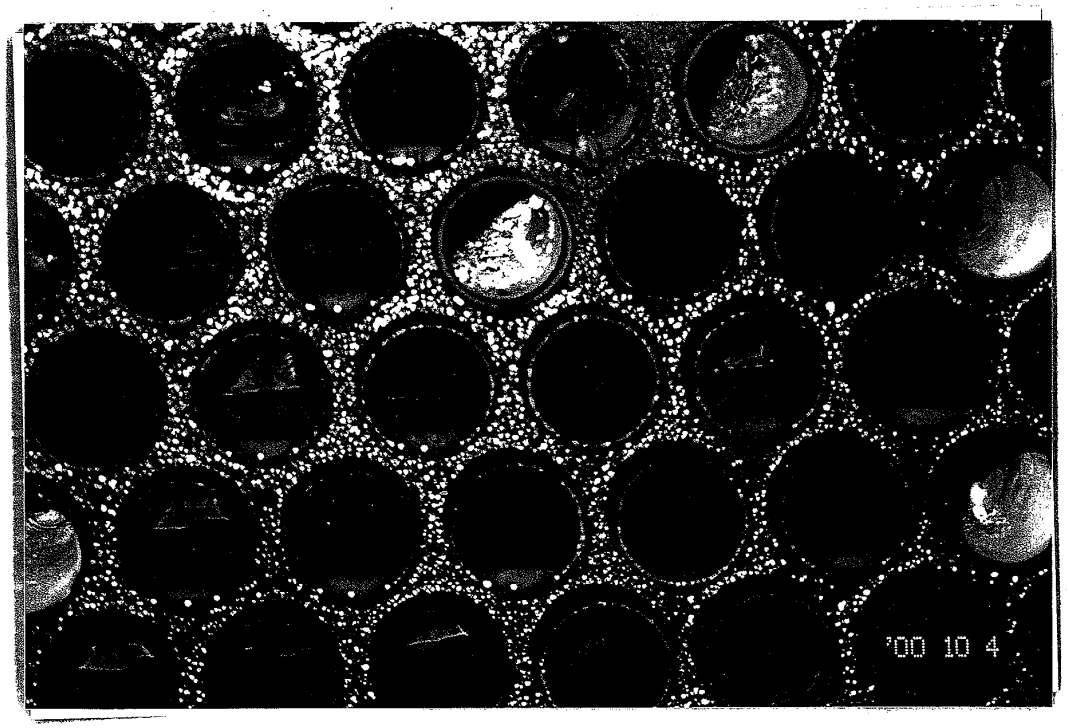


ISES **2A-1** Turn Around Water Box

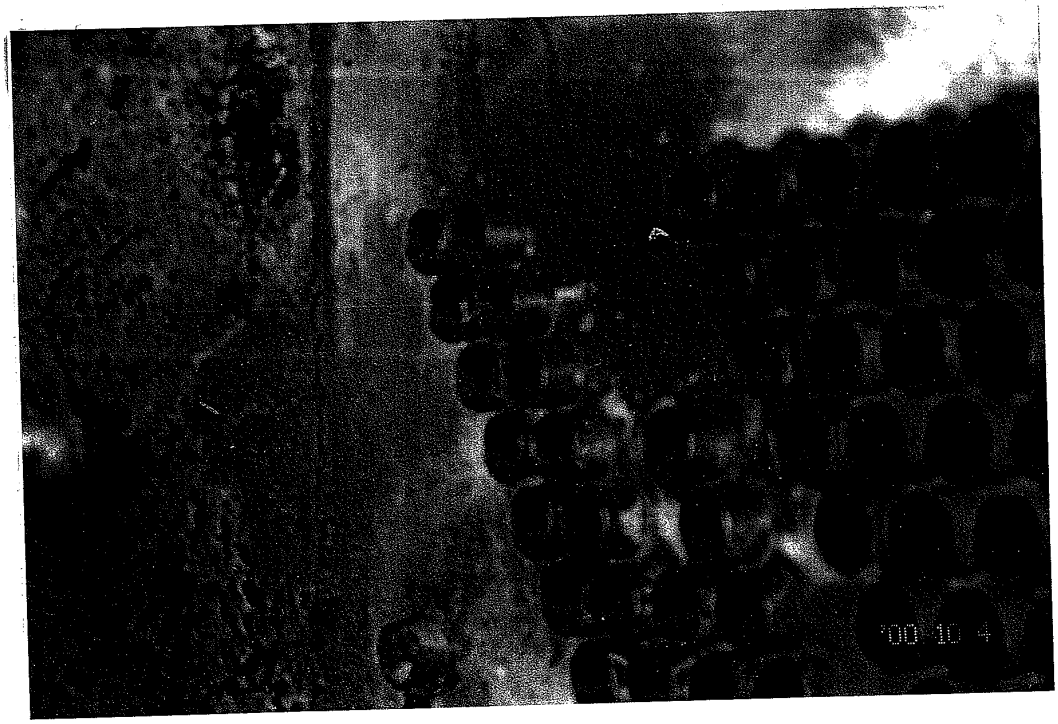


ISES **2A-1** Turn Around Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD

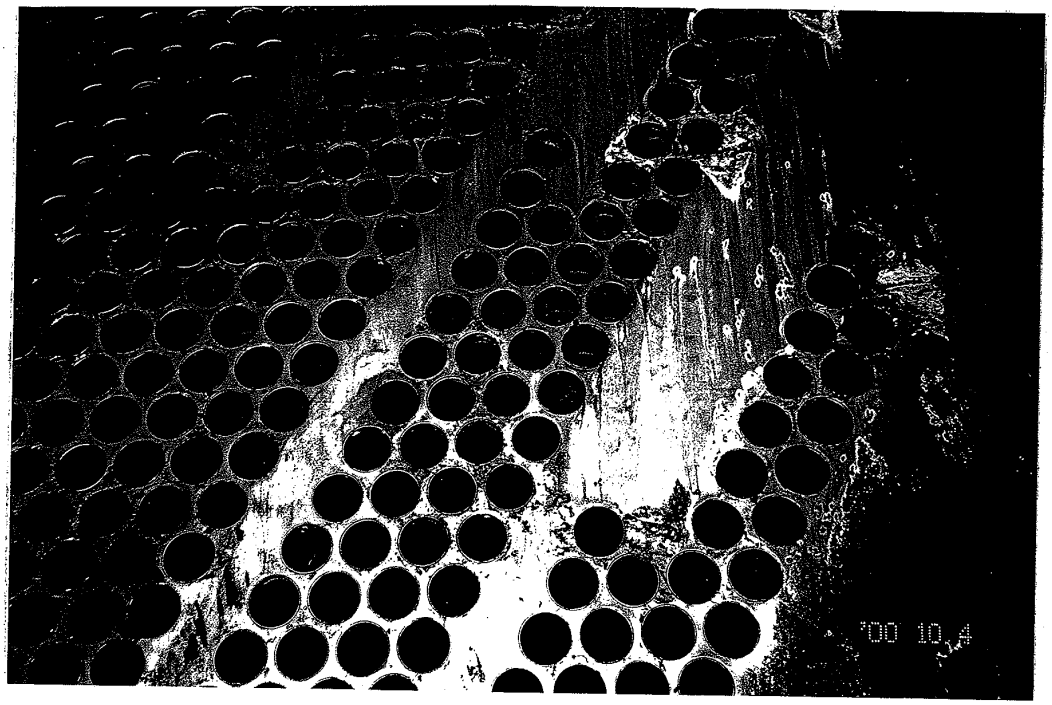


ISES **2B-1_** Outlet Water Box

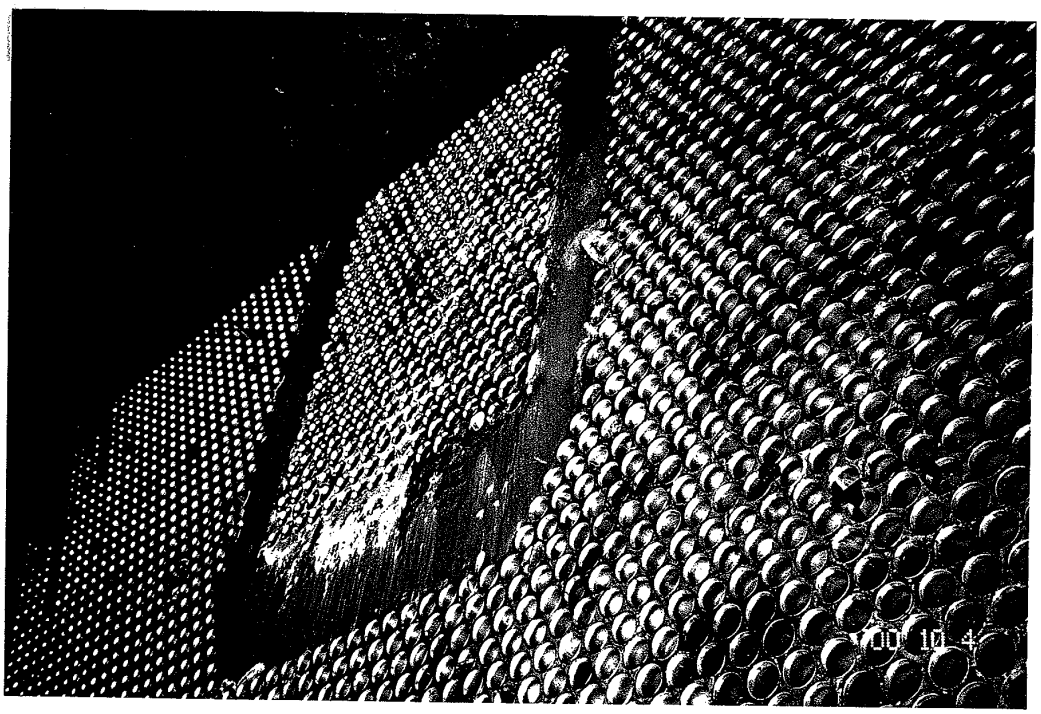


ISES **2B-1_** Outlet Water Box

Claim Withdrawn. Contains No CBI. 07/11/2016_YD



ISES 2A-1 Turn Around Water Box



ISES 2A-1 Turn Around Water Box